THE OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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The Oil Man's Calendar

OCT. 26	**National Petroleum Association, Department of Fire and Accident Prevention, Olean, New York.**
28	**Western Petroleum Refiners Association, Shreveport, Louisiana.**
27-29	**Annual Convention, Texas Division, Mid-Continent Oil & Gas Assn., San Antonio, Texas.**
NOV. 3-4	**American Association of Petroleum Geologists, Pacific Section, Los Angeles, California.**
4	**Mid-Continent Oil & Gas Association, Oklahoma-Kansas Division, Tulsa, Oklahoma.**
14-18	**American Petroleum Institute, (Annual), Stevens Hotel, Chicago.**
DEC. 5-9	**American Society of Mechanical Engineers, (Annual), New York.**
	Mid-Continent Oil & Gas Assn., Standing Tax Committees, Dallas, Texas.
7	**Oil & Gas Association of Michigan, Mt. Pleasant, Michigan.**
10	**West-Central Texas Oil & Gas Association, Abilene, Texas.**
APR. 24-29	**Oil-World Exposition, Houston, Texas.**

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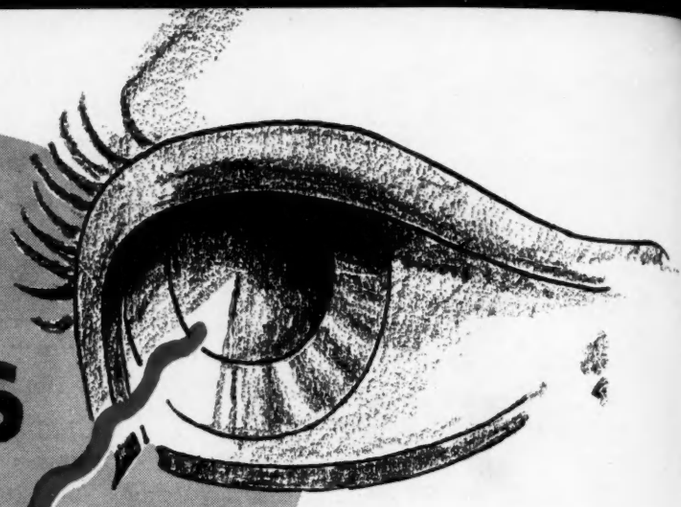

The EYES OF WORLD BUYERS OF OIL EQUIPMENT ARE UPON—the OIL-WORLD EXPOSITION

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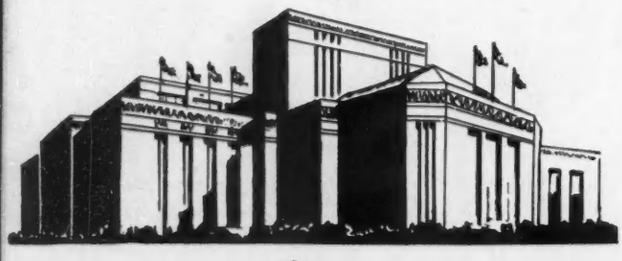

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This Week's Panorama

ALTHOUGH recent declines of crude oil and gasoline prices have been discouraging to the oil industry, the general business outlook has continued distinctly promising. And if the expected business gains this fall and winter materialize, the problem of restoring stability in the oil industry naturally will be made easier.

More Business Recovery Promised

Especially significant have been (1) the further rise of the Federal Reserve Board's index of industrial production, and (2) the recent rise of the stock market to a new high for the year.

The Federal Reserve Board has estimated that industrial production improved in September to about 90 percent of the 1923-1925 average. Making allowance for seasonal differences, September showed an increase of 2 points over August and 14 points over the recession low of last May, although it was 21 points below September of last year. The September industrial production was the best since that of last October, which was 102 percent of the 1923-1925 average. The pre-recession peak was 118, reached in May, 1937.

The increase of industrial production has been general, although most noteworthy in the textile and steel industries. The board called attention to increased residential construction, larger freight traffic, and increased retail and wholesole trade.

The stock market last spring foreshadowed better business, just as it previously gave advance warning of the recession. It appears promising, therefore, that the stock prices rose to new high levels recently, indicating that additional business improvement may be impending.

The American Federation of Labor in its latest monthly survey of business declared that a strong upswing in the business cycle was under way, despite adverse conditions. "Nevertheless," said the survey, "we cannot know yet whether business is likely to go forward now at the rapid pace of July and August. Some forecasters believe not and think a moderate recovery more likely this fall.

"Steel production is expected to reach 50 or 55 percent of capacity before winter, which would compare with 30 percent operations last spring." (Operations currently are around 52 percent of capacity.)

It is reported that in Wall Street there is conviction a period of improved business is beginning and will last at least until spring, although some expect a longer upswing.

President Roosevelt is said to be optimistic over the business and industrial outlook and to feel that there will be a steady recovery if reasonable prices are maintained and if labor and industry cooperate.

Inasmuch as business was sharply declining in the latter part of 1937, while it currently is improving rapidly, it is promised that many industries will show better results for late 1938 than for late 1937.

Aviation Advances Hydrogenation

The development of aviation is giving a strong incentive for practical application of hydrogenation, an oil refining process which seems almost too magical to be true, but which has been too costly for wide commercial utilization.

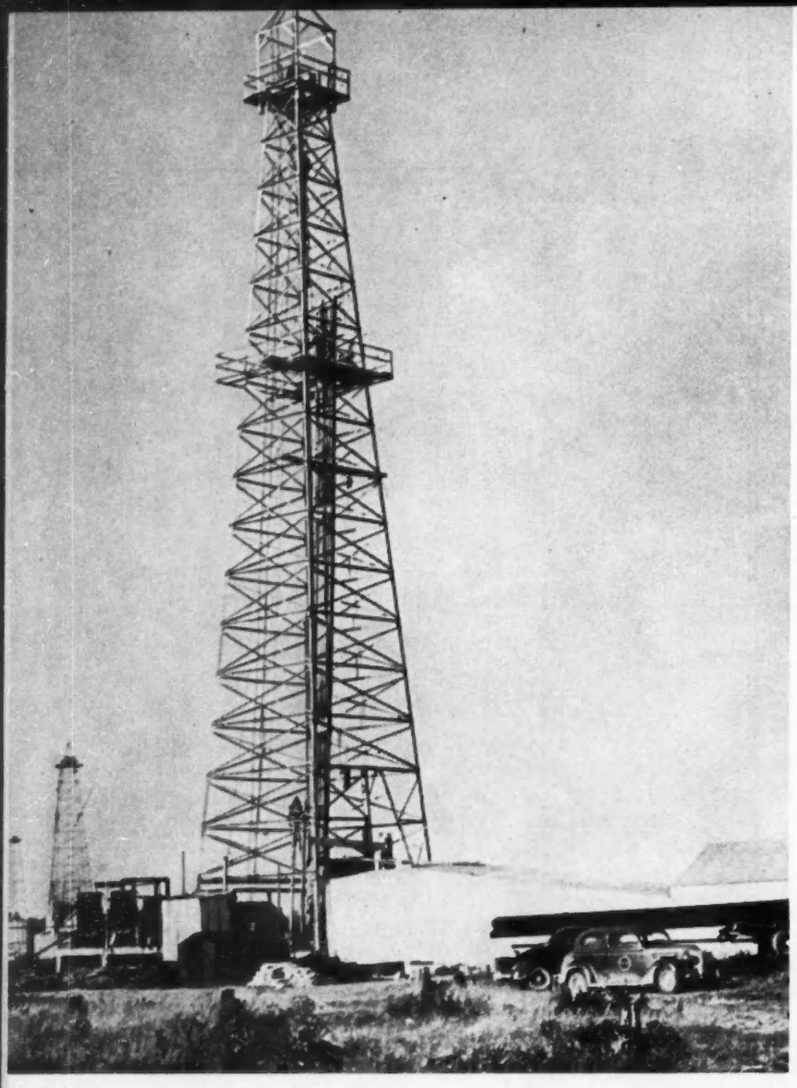
Through hydrogenation, a barrel or more of gasoline can be made out of a barrel of crude oil. For the heavy residues, after distillation of the lighter products, can be transformed into lighter hydrocarbons by adding hydrogen in the presence of a catalyst and under high temperatures and pressures.

Moreover, the process makes possible the commercial manufacture of 100 octane aviation gasoline from ordinary oils, whereas such gasolines originally had to be made from select and scarce grades of crude oils having the needed qualities. The substantial demand for aviation gasolines consequently is advancing the commercial development of hydrogenation.

Four commercial hydrogenation plants have been placed in operation in the United States. They are located at the refineries of: Standard Oil Company of California at Richmond, near San Francisco; Standard Oil Company of New Jersey at Bayway, New Jersey; Standard Oil Company of Louisiana at Baton Rouge; and Gulf Oil Corporation at Port Arthur, Texas. The Baton Rouge plant is making about 7000 barrels of aviation gasoline daily. The plant in California, operating in conjunction with a catalytic polymerization unit, turns out aviation gasoline of 100 octane value and high ignition diesel fuel oils. The hydrogenation and polymerization units are linked with cracking units. Olefinic hydrocarbons are made in the cracking operations, and they serve as the charging stock for the polymerization unit. The products of the polymerization unit, in turn, are hydrogenated to manufacture the 100 octane aviation gasoline.

Hydrogenation originated in Germany from attempts to increase the yield of gasoline from crude oil, and it had advanced sufficiently by 1926 to become discussed seriously as a possible practical refinery process.

The large supplies of crude oil in the United States have tended to limit the need for hydrogenation. Currently, the industry, without material use of hydrogenation, is obtaining around 45 percent yield of gasoline



An event in Michigan is this 122-foot rotary derrick. While it would be just another one in the Southwest, it is the first of this size to be used in Michigan. The derrick is being used by Parker Drilling Company of Tulsa on Gulf Oil Company's Van Horn 3, Clare County, which is the first contract for the concern in the state.

from crude, and the crude is comparatively cheap. Moreover, prices for fuel oil, kerosene, lubricants, and other products are favorable, in relation to gasoline prices.

Nevertheless, in some refinery processes, especially cracking, large quantities of residues with comparatively low value accumulate. And those products can be converted by hydrogenation into motor fuels, kerosene, lubricants, and other high grade products.

Hydrogenation therefore has potentialities for greatly conserving the petroleum reserves, through the more efficient refining.

Stock vs. Bond Financing

Jerome N. Frank, member of the Securities and Exchange Commission, recently raised for discussion a question of interest in the oil industry — whether the capitalistic economy might not benefit by a complete shifting from bond financing to stock financing by American industries. He said the question could not be answered adequately without a thorough study of insurance company investments, and added that the SEC contemplated making such a study.

The shifting would make investors stockholders, entitled to dividends payable out of earnings, rather than creditors, entitled to demand payment of interest at fixed intervals, regardless of earnings. Industry's necessity of meeting fixed charges seems to augment depressions, the commissioner said, by causing bankruptcies and receiverships. One of the main ills of the railroads, he asserted, was traceable to the burden of interest charges, which could not always be met, and which led therefore to bankruptcies. On the other hand, Frank added, the claim to dividends is elastic and varies with corporate earnings, and if a company fails to pay dividends when earnings shrink, bankruptcy does not ensue.

An idea stressed by the commissioner was that the shift from bond to stock financing, by reducing bankruptcies, receiverships, and reorganizations, and thus by minimizing depressions, might bolster the capitalist system against the attacks of communists and others. For it is during depressions that criticism of the profit system is most severe.

After having redeemed numerous issues of bonds several years ago, oil companies subsequently have shown a pronounced preference for stock financing as against bond financing, and the industry now has comparatively small long term debt.

This relative freedom from fixed obligations probably helped oil companies to go through the 1929-1932 depression and the ensuing several years of small profits in comparatively good financial condition.

One large oil company in its annual report a few years ago called special attention to the fact that it was steering clear of bond financing and expressed the opinion that stock financing was sounder for that company and for the oil industry as a whole.

Nevertheless, oil companies have turned increasingly this year to bond financing, and various additional companies are understood to be contemplating the issuance of bonds.

The companies that have made long term borrowings have explained that more capital was needed in order to expand properties and facilities in line with the growing demand for oil. Partially responsible for the borrowing, also, may have been the fact that the federal undistributed profits tax forced companies to pay out in dividends virtually all of their earnings in 1937.

However, the additional funds might have been obtained through sale of stocks instead of bonds, and the lately acquired preference for bond financing undoubtedly has been based in large measure on the temptingly low interest rates that now prevail.

Current Situation Embodies Favorable Elements

Oil demand is showing improvement; inventories are comparatively low . . . Principal danger lies in threatened unbalancing of production and demand

By L. J. LOGAN, Associate Editor

THE oil industry's situation and outlook probably are not as unfavorable as recent developments might have indicated.

In fact, there are numerous circumstances now that constitute a basis for optimism.

The chief danger now existing is the uncertainty over future crude production control. Because of the recent crude price reductions, loosening of proration has been threatened. However, passage of time following the price cutting apparently is bringing support to the idea that the logical way to regain better conditions is the conservative path of strictly balancing production with demand.

At any rate, November proration orders have not yet been issued, and there have been some indications that the leading producing states might cooperate in a program of strict allowables.

The laws of economics indicate that such a program undoubtedly would have a strengthening effect on the markets for both crude and refined oils.

Hope for Better Prices

If crude production and refinery runs should be reasonably controlled, the industry would be in position to hope for an early improvement in the market conditions, inasmuch as inventories of both crude oil and gasoline are comparatively low, and inasmuch as oil demand is now showing some improvement.

If the general business recovery proceeds, in fact, it is conceivable that the oil industry may be able to recover at least a part of the recent price losses. Certainly, it is not too much to hope that a substantial betterment of the markets may be achieved by next spring, when the heavy consuming season for gasoline opens.

Markets Settle Down

The markets had become fairly well settled last week at the lower price levels, although some further adjustments occurred. A 10-cent cut in the Corning, Ohio, crude price was about the only important new development in the crude market. Gasoline prices at Mid-Continent refineries declined a little further in some instances, but offerings were not as free as formerly. Kerosene and fuel oil prices were mostly unchanged.

Apparently, gasoline prices are fairly safe at the present levels, which are, however, comparatively low. The refiners probably have benefited slightly from the crude price reductions, although the crude cuts were accompanied by some additional dropping of the gasoline prices.

Gasoline Situation Better

Although the prospects for results in coming months are more important than current conditions, some encouragement may be obtained from the latest weekly statistics of the industry.

The figures showed continued maintenance of crude oil production and refinery runs at moderate levels and a contra-seasonal withdrawal from gasoline storage.

The stocks of gasoline are only 4 percent larger now than a year ago, and are therefore fairly well justified, as gasoline consumption has been running similarily above last year's trend.

Fuel oil stocks are larger than ever before in the industry's history, being 28 percent greater than at this time last year. However, no great anxiety is felt regarding the supply, the assumption being, apparently, that fall and winter heating requirements and the indicated business revival will make large inroads into the storage.

Oil Demand Turns Up

The incipient business recovery already has brought a definite betterment of oil consumption. The upturn occurred in August, and is reflected in the lately published monthly report of the Bureau of Mines on petroleum and petroleum products, covering August.

The trends of oil consumption still were unfavorable in July, but they improved in August.

For several months, the demand for petroleum had been running lower than in the corresponding months last year. But in August it was better this year than last year, as shown in detail in an accompanying table.

Total demand for United States oil in August, 1938, was 3/10 of 1 percent larger than in August, 1937, whereas it had been off 5.5 percent in July and 2.7 percent in June and May.

The improvement in August oc-

curred, moreover, despite a slowing down of export business, the shipments of both crude and refined oils having been nearly the same as in August last year.

Total domestic demand for oil products was 4/10 of 1 percent larger in August, 1938, than in August, 1937, whereas it had been 7.8 percent smaller in July, 1938, than in July, 1937, and off 6 percent in June.

Most of the products of the industry were in better demand in August, 1938, than in August, 1937, increases having included those of 1.7 percent for gasoline, 17 percent for kerosene, 7.5 percent for gas oil and distillates, 4 percent for lubricants, 15 percent for asphalt.

In July, in contrast, domestic demand for gasoline was 6.4 percent lower than a year previously, while demand for lubricants was off 7.1 percent.

Residual fuel oils, because of the pick-up in industrial production, were in better demand in August than in July, although requirements were 9.4 percent lower than a year previously.

New Allowables Uncertain

Reserved until around the end of the month is the answer to the paramount question of how well crude oil production is to be balanced with demand in the immediate future.

The answer lies largely in the hands of the members of the Texas Railroad Commission, who indicated last week that a new order setting November allowables would not be promulgated until the latter part of October, although the commission a week ago heard evidence on which to base an order.

For October, the Texas allowable production averages 83,878 barrels daily, or 6.2 percent, less than the indicated demand, considering that wells were shut in on Saturdays and Sundays in the first four weeks of the month.

Following the Texas Railroad Commission's state wide proration hearing at Austin, October 15, in preparation for the fixing of November allowables, it was indicated that at least some liberalizing of the Texas allowables might be made, possibly through the lifting of either the Saturday or Sunday shutdowns, or both.

There was considerable agitation at the hearing for permitting larger Texas production, particularly because previous curtailment had not prevented general reductions of crude prices. But on the other hand, some operators warned that increased production might cause additional crude price reductions.

The Oklahoma Corporation Commission will hold its monthly market demand hearing for November on October 26, although W. J. Armstrong, chief conservation officer of the commission, will confer with producers and purchasers at Oklahoma City on the afternoon of October 25. Oklahoma's present allowable is 428,000 barrels daily, which is 95,600 barrels daily, or 18.2 percent, less than the Bureau of Mines estimate of market demand, and there is sentiment in favor of leaving the allowable at that level.

Louisiana authorities have indicated a willingness to cut that state's allowable back 40,000 barrels daily on November 1, although they warned that it might be amended upward if other states failed to hold their production down strictly. Louisiana in October allowed 12,070 barrels a day, or 4.8 percent, more production than the market demand as estimated by the Bureau of Mines.

New Mexico's October 1, allowable was 5400 barrels a day or 4.6 percent below indicated demand, and the state likely will continue similarly tight control in November.

Kansas in October adopted as its allowable the Bureau of Mines estimate of current demand for Kansas crude. In some earlier months the state had been holding production below the Bureau of Mines estimates; but there was much agitation for more liberal quotas and some Kansas officials were condemning the Interstate Oil Compact Commission and other states, having contended that Kansas was not getting its share of the national market. It remains to be seen what attitude will be taken regarding November allowables.

California operators through their voluntary proration set up for October a goal of production 4,000 barrels a day, or 6/10 of 1 percent, less than the indicated current demand for their oil, but the state actually has been producing around 60,000 barrels a day more than the demand. Consequently, stocks, especially of fuel oil, have been piling up, and the California markets have weakened, although the state escaped the recent widespread price cutting. For November, no material change in the curtailment results is in prospect.

Oil Demand Definitely Improved in August

(These figures on petroleum demand, in thousands of barrels, are from the Bureau of Mines)

ITEM	JUNE COMPARISON			JULY COMPARISON			AUGUST COMPARISON			YEARLY COMPARISON		
	June, 1937	June, 1938	Percent Change	July, 1937	July, 1938	Percent Change	August, 1937	August, 1938	Percent Change	First 8 Mos., 1937	First 8 Mos., 1938	Percent Change
Total Demand	113,122	109,995	— 2.7	117,942	111,444	— 5.5	119,537	119,902	+ 0.3	877,108	865,995	— 1.3
Exports—												
Crude petroleum	6,181	7,424	+20.1	6,363	7,250	+13.9	7,423	7,003	— 5.6	42,231	54,430	+28.9
Refined products	8,771	10,338	+17.8	9,502	10,054	+ 5.8	10,352	10,763	+ 4.0	68,477	78,060	+14.0
Domestic Demand—												
Motor fuel	48,580	48,293	— 0.6	50,704	47,474	— 6.4	49,597	50,459	+ 1.7	344,031	342,687	— 0.4
Kerosene	3,259	3,257	— 0.06	3,594	3,752	+ 4.4	3,667	4,292	+17.0	33,444	34,798	+ 4.0
Gas oil and distillates	6,295	5,490	—12.7	6,584	7,863	+19.4	7,197	7,737	+ 7.5	71,281	70,720	— 0.8
Residual fuel oils	26,060	22,278	—14.5	25,825	20,548	—20.4	26,259	23,775	— 9.4	217,353	186,494	—14.2
Lubricants	2,039	1,606	—21.2	1,984	1,843	— 7.1	1,924	2,002	+ 4.0	15,908	13,750	—13.6
Wax	88	85	— 3.4	104	75	—27.9	84	81	— 3.6	724	721	— 0.4
Coke	374	573	+53.2	482	445	— 7.7	476	473	— 0.6	3,620	3,485	— 3.7
Asphalt	2,674	2,675	+ 0.04	2,782	2,800	+ 0.6	2,783	3,201	+15.0	15,336	15,936	+ 3.9
Road oil	1,321	1,274	— 3.5	1,510	1,469	— 2.7	1,590	1,581	— 0.6	5,976	5,575	— 6.7
Still gas	5,333	5,387	+ 1.0	5,531	5,730	+ 3.6	5,653	5,753	+ 1.8	40,929	41,751	+ 2.0
Miscellaneous	206	157	—23.7	198	177	—10.1	180	158	—12.2	1,538	1,207	—21.5
Losses	1,941	1,158	—40.3	2,779	1,964	—29.3	2,352	2,624	+11.6	16,260	16,381	+ 0.7
Total domestic demand	98,170	92,233	— 6.0	102,077	94,140	— 7.8	101,762	102,136	+ 0.4	766,400	733,505	— 4.3

CHARACTERISTICS, METHODS OF COMBATING AND ECONOMIC IMPORTANCE OF

Heaving Shales

By MICHEL T. HALBOUTY,
Chief Geologist and Petroleum Engineer,
Merit Oil Corporation of Texas, Houston

and

NICOLAS A. KALDENBACH,
Petroleum Engineer and Geologist*
Norman, Oklahoma

This article was submitted for publication at this time because of the widespread interest in heaving shale, and is dedicated to the cooperative effort to combat these shales now being made by the oil industry under the supervision of Harry H. Power of the University of Texas. The authors and The Oil Weekly believe this cooperative study will result in the compiling of very important constructive ideas and that they will be of great assistance in fighting heaving shales in the future.

In the preparation of the article a general outline was adhered to in an attempt to present the many different phases of the heaving shale problem, including the characteristics and behavior, causes and possible remedy of the heaves, mode of existence and geographical location of these hazardous bodies.

HEAVING shales were first encountered in the Gulf Coast as early as 1925 by companies drilling on piercement type salt domes. Very little attention was given to the characteristics of this shale, and the first records show that it was logged up by the driller as "gummy shale that stuck pipe." The early wells which encountered this shale were drilled to shallow depths ranging from 3500 to 4000 feet, which were considered deep wells during that time. Between 1925 and 1930 many wells were abandoned because of heaving shales which either stuck drill stem or prevented deeper drilling; nevertheless, in a very few rare instances, a well would occasionally penetrate a body of the shale and a fine oil sand would be found underneath. The operators gradually realized that underneath the shales, which were then termed as "heaving shales," would lie large bodies of producing oil sands, and consideration was given to the prospect of fighting these shales in a scientific manner in the attempt to penetrate an entire body during the initial drilling of a well.

There were two companies that began scientific research in the study of heaving shales on a large scale, and these two companies were the pioneers in the study of the present day methods of fighting heaving shales. The two companies were Gulf Oil Corporation and Yount-Lee Oil Company, the latter being an independent oil corporation located in Beaumont, Texas. It was very logical for these two companies, individually and unbeknownst to the other, to conduct scientific research on heaving shales because of their vast holdings on proven piercement type domes, as *at that time heaving shales were not found anywhere except on and around piercement type domes.* Yount-Lee Oil Company was undoubtedly the foremost piercement type dome operator in the Gulf Coast and had more acreage on these domes than any other company. Gulf Oil Corporation also was very active on the flanks of these domes and their trouble was similar to that of Yount-Lee Oil Company in that the heaving shales were causing the abandonment of many wells. In the attempt to determine the penetrating extent of the shales, these two companies began a research program de-

* Formerly with the Royal Dutch Shell, Dutch East Indies.

signed solely for the study of heaving shales. A large appropriation had been made by each company toward this research and both worked entirely separate from the other. Important progress was made by both companies and the percentage of failures began to decrease very rapidly. It became an established fact that mud control was an important factor in combating heaving shales.

In 1932 and 1933 other companies realized that mud control was becoming important in well drilling and that a great many formulas and special mechanical devices which originally were maintained in combating heaving shales, were valuable materials in the upkeep of good drilling mud and it was at this time, the latter part of 1933, that all companies began earnest work in maintaining a good drilling mud regardless of whether or not trouble was encountered. Also, in that year drilling of deeper wells on non-piercement type domes was becoming more common and some of these wells were encountering heaving shales. It was at this period that it was first realized that heaving shales would occur on types of structure other than the piercement domes. Major oil companies, as well as independents, assigned engineers in the field to make a study of this heaving phenomenon. From 1933 until the latter part of 1937, all companies had guarded their results and studies on this important problem very carefully and no information was available from one company to the other as to the results that were obtained by each company's work in this field. Companies were spending hundreds of thousands of dollars in fighting heaving shales and each did not and would not give any data to anyone, or hardly dared to discuss the results with an outsider. Because of harbored, prejudiced and biased ideas, little progress was made by any one company in combating heaving shales, although there were many wells which had penetrated some bodies successfully. However, no general method of combating these shales was available and the companies began to realize that their guarded results and methods were not as efficient or beneficial as primarily conceived, and that a cooperative effort must be made by all if any definite and general progress is to be made in combating heaving shales. With all the means, physical and chemical, that were devised for the combating of these hazardous bodies, the companies were still at a loss as to the best methods, and all companies decided to cooperate and unite their results in the hope to obtain a definite program which would not only be economical to each, but, at the same time, afford to each information which their respective research departments had failed to obtain.

In such a combined study of combating heaving shales it is apparent that two definite partitions must be made in respect to the results obtained. One, in that all results must be summarized and analyzed and correlated for heaving shales adjacent to or lying against piercement type domes, and secondly, heaving shales not associated with salt domes but lying on or above or around deeply buried non-piercement type domes, faulted structures, or other types of structures. This particular factor of difference of areas must be borne in mind because, in the opinion of the authors, the conditions involved in piercement type heaving shales are of a vertical, high angle of dip, nature, whereas heaving shales involved on other types of structures are usually horizontal where the curvatures of the formations are not as abrupt as they are on piercement type domes. This latter type is a heaving shale mainly because of the chemical characteristics of the shale. On the piercement type dome the formations are standing against the flank of the dome and riding up on the dome from an angle of 30 to 90 degrees and are sometimes overturned from vertical. Shales which are in such a position are more difficult to combat than those on other types of structures *regardless* whether or not the chemical reactions of the shale are similar to those on other types of structures. In other words, a shale which would ordinarily not heave if lying in a somewhat horizontal position would most certainly heave if lying in a position of such a high angle. This high dip is usually referred to as the *angle of repose* of the shale. This angle of repose is greater on the piercement type domes than on any other type of structure. So significant is the angle of repose of shale bodies that special research was conducted on its importance for months. The only definite conclusion that was ascertained in such a research is that when the angle of repose is beyond a critical point placed at from 35 to 45 degrees, the shale has a natural tendency to slough regardless of the chemical type. This condition does not and would not exist on structures where the shale bodies were more or less horizontal.

[1] J. M. Frost III. "Geologic Study Proves Existence of Five Heaving Shale Trends on Texas Gulf Coast," The Oil Weekly, July 25, 1938.

TABLE 1

Generalized Geologic Section of the Formations in the Three Heaving Shale Zones of the Texas-Louisiana Gulf Coast.

AGE	GROUP	FORMATION		PALEO ZONE
Pleistocene	Houston	Beaumont Lissie		
Pliocene	Citronelle Upper Fleming	Goliad Lagarto		Reworked Cretaceous
Miocene Basal Miocene	Lower Fleming Catahoula	Oakville Catahoula		Potamides matsoni coastward Non-marine inland, marine coastward
Oligocene	Gueydan	Subsurface		Discorbis Heterostegina Marginulina
		Frio		Non-marine inland, marine coastward
	Vicksburg	Vicksburg		Textularia warreni
Eocene	Jackson	Whitsett		Marginulina cocoaensis Massalina pratti
		McElroy		Textularia hockleyensis
		Cadell		Textularia dibollensis
		Moody's Branch		Operculina vaughni and camerina moodybranchensis
	Claiborne	Yegua	Cockfield	Nonionella cockfieldensis (upper) Discorbis yeguaensis (lower)
			Upper Saline Bayou	Eponides yeguaensis

Geological and Geographical Distribution of Heaving Shale in Texas-Louisiana Gulf Coast

The distribution of heaving shales in the Gulf Coast of Texas[1] and Louisiana affords an interesting geological study of the formations which are, in part, heaving shales. It is of extreme importance to an operator to know (1) the geologic horizons which might carry heaving shales and (2) the geological distribution of the type shales along

certain trends or belts in the coast. The knowledge of these two factors would enable an operator to estimate the approximate depth of the heaving shale section. The operator would have ample time to prepare the mud for the penetration to the shale before the shale depth is attained. By such preparedness the mud is checked thoroughly for its native characteristic and chemicals added in order to obtain the desired effect to counteract the chemicals in the shale, and to give the necessary instructions of drilling which includes the rate of drilling, pump pressures, spudding action, etc., and such precautions to be taken from 500 feet to 1000 feet above the estimated shale depth. In the writers' opinion, there are three definite heaving shale belts: (1) the Miocene-Oligocene, (2) the Jackson, and (3), the Yegua. The Miocene-Oligocene shales were included in the same belt because of the vast extent of the Oligocene shales and the Miocene shales fall within the Oligocene belt. The Oligocene belt covers the majority of the piercement type domes in the Coast and all Miocene heaving shales have only been found on piercement type domes. Therefore, instead of illustrating the Miocene heaving shales to individual salt domes, it was logical to include this shale section in the Oligocene belt. In the foregoing discussion, the Miocene heaving shales are not discussed as to any particular heaving horizon, as in this formation the shales become classified as a heaving type only if the angle of repose of the shales against the domes causes them to heave. Miocene shales do not possess any chemical heaving characteristic. On domes *near* the coast line Miocene shales have given more trouble than those from 25 to 50 miles north of the coast line. This is probably due to the greater thickness of Miocene near the coast line, and a greater angle of repose of the shales caused by the necessity of uplifting more formation. The lower Miocene on the coastline domes are more conducive to heave than the upper part.

Table 1 is a generalized geologic section of the formations found in the three belts.

Plate 1 shows the thickness of the formations in the Miocene-Oligocene belt. The Type 1 Well is designed to show the increased thickness of the formations near the coast, and Type 2 Well illustrates the gradual decrease in thickness of the horizons. The heaving section is also shown.

Plate 2 shows the relative thickness of the formations in the Jackson belt and Yegua belt. The heaving sections are also shown.

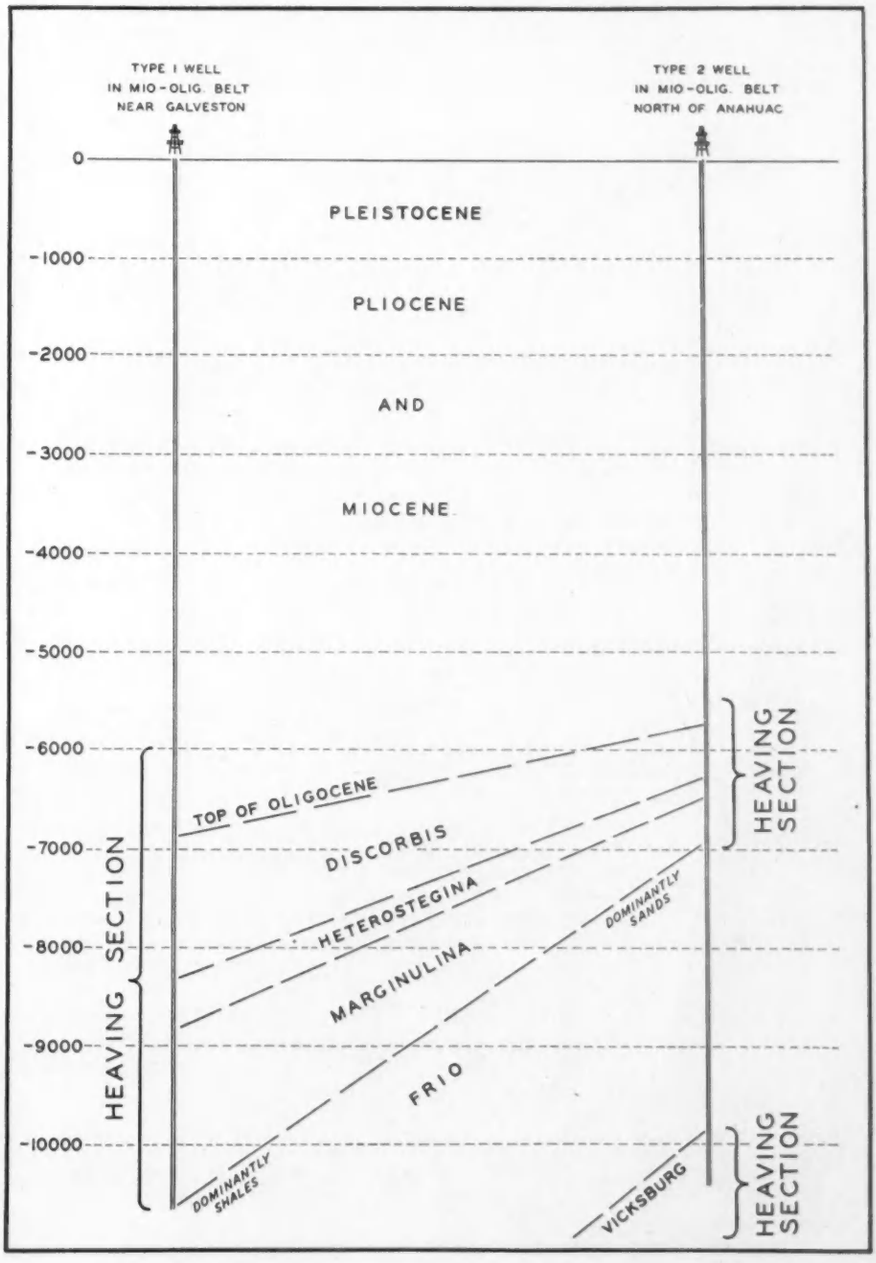
Even though the term "belt" is used in distinguishing the geographical distribution of these shales, it must not be misconstrued that the other two types of shales do not occur in any one of the other belts. By that is meant that the Oligocene shale can also be found in the Jackson belt above the Jackson shales and that the Oligocene and the Jackson shales would combine to give considerable trouble, and it has been known that all three types, Oligocene, Jackson and Yegua shales, sometimes occur in one area even though they are considered as three definite geologic types of heaving shales.

The terms "Oligocene," "Jackson," and "Yegua" represent a number of horizons and each one of these formations will be taken separately and each horizon illustrated.

In the Oligocene formation, there are four zones which are conducive to heave and which have cost operators thousands of dollars in the attempt to penetrate the heaving shales which they contain. The Oligocene is divided into the Middle Oligocene and the Lower Oligocene. The Middle Oligocene contains the *Discorbis zone*, the *Heterostegina zone* and the *Marginulina zone*, and the

PLATE 1

Thickness of formations in Miocene-Oligocene Belt.

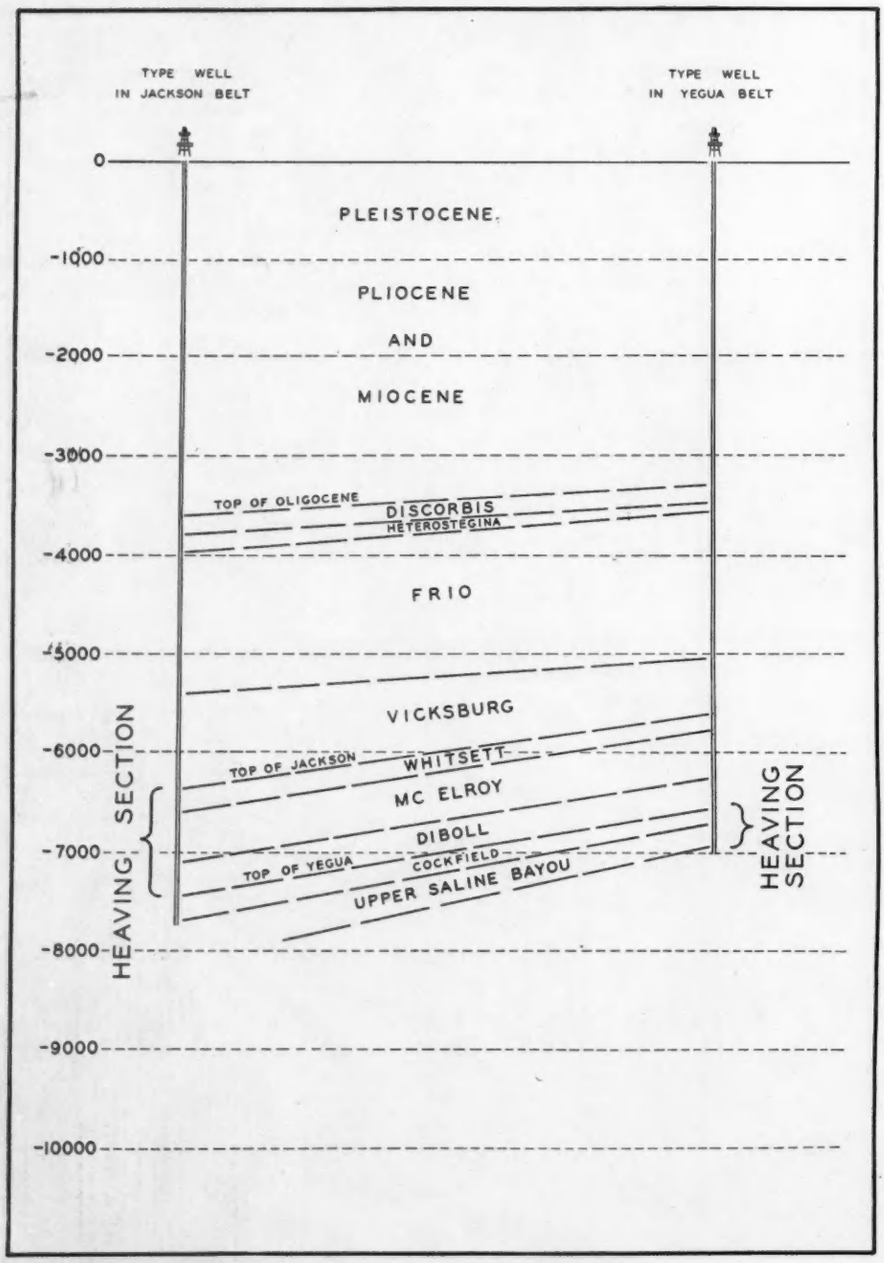


Lower Oligocene contains the Frio horizon and the Vicksburg horizon. All these zones contain heaving shales except the Frio, which is dominantly a sand section and to date no heaving shale has been reported in this particular Frio horizon. The *Marginulina* is the most hazardous, although in some areas, the *Discorbis* becomes practically impenetrable; however, when such a case is present it is always on piercement type domes. The three zones in the Middle Oligocene are present in a geologic belt which is clearly shown on Figure 1. All three of these formations carry shale bodies which are highly bentonitic and consequently, are conducive to heave. The Vicksburg formation of Lower Oligocene is the most hazardous of any shale in the Oligocene period and on all piercement type salt domes, these four zones give a considerable amount of trouble. The Vicksburg horizon is considered to be the base zone for all piercement type domes and this particular zone is considered to be the most hazardous because of the enormous pressure and uplift which the shales were subjected to during the time of uplift of the dome.

The Jackson formation consists of the Whitsett, the McElroy (*Textularia hockleyensis zone*), and the Caddell (*Textularia dibollensis zone*). These three zones are dominantly shale, with a very small percent of sand. These shales extend in a belt as shown in Figure 1. All the shales in the three zones in the Jackson formation have similar characteristics and it has been observed that if the Whitsett zone, which is the upper zone in the Jackson, contains heaving shale in any area, then it is highly possible that the McElroy and Caddell will also contain a troublesome shale. However, in some areas the Whitsett and McElroy would not be conducive to heave, whereas the Caddell would give considerable amount of trouble. In the writers' experience, there has been no area where the Whitsett gave trouble and the other two lower zones did not. It seems to be a general rule in the Jackson formation that if the upper zone is conducive to heave, the other two will also, but that any one of the upper zones would not contain heaving shales and yet be present in the lower.

PLATE 2

Thickness of formations in Jackson and Yegua belts.



The Yegua formation contains two zones, the Cockfield and the Upper Saline Bayou. In some areas these two zones give considerable amount of trouble because of the heaving of the shale. The geological belt for this shale is shown in Figure 1.

The most important factor for an operator to bear in mind when a location is made is to determine at what depth certain formations would be encountered and then to estimate whether or not the area in which he is drilling is considered to be a heaving shale area. For example, a well drilled in Matagorda County, Texas, regardless of whether it is drilled in the North, South, East or West, is considered to be in a heaving shale area because wells drilled in all parts of the county have had trouble with heaving shales. With information of this kind available in Matagorda County, an operator can estimate the total depth at which to expect shales which gave other wells considerable trouble and be able to attempt to counteract this trouble by treatment of his mud before actual penetration of the shale is begun. On the other hand, a well can be drilled in the eastern part of Brazoria County, centered around the Hastings and Friendswood areas, with safety as far as heaving shale is concerned because to date that particular area has not given any heaving shale trouble. As a contrast, a location could be made a little south of the Hastings area into Galveston County, centering around the Hitchcock field, and considerable trouble would be encountered with heaving shales. In other words, although the three belts as illustrated in Figure 1 are

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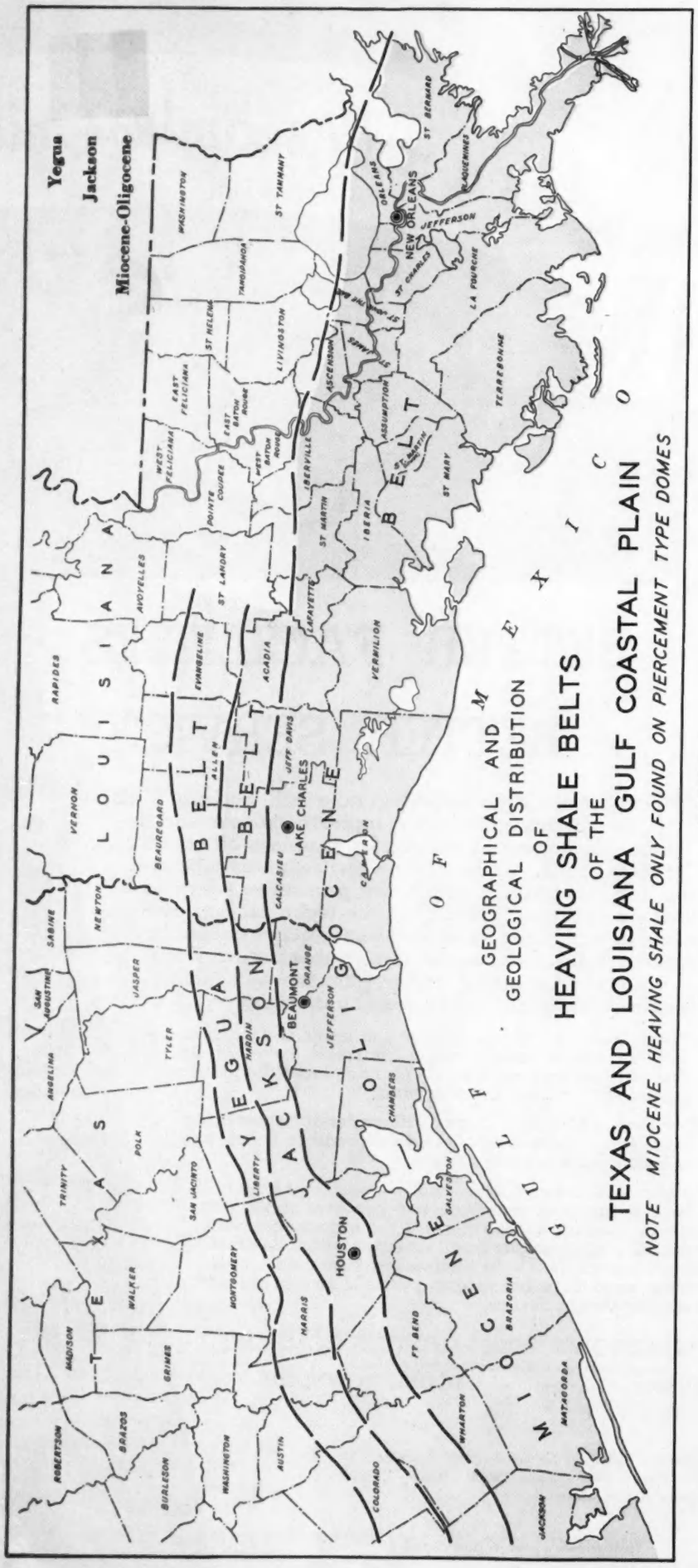

FIGURE 1

considered as heaving shale belts, *there are many areas in these belts which are not classified as heaving shale areas.* A complete explanation and illustration of these areas would take more space than would be herein provided for, and in conclusion, as to geographic distribution, it should be stated that the primary step for an operator in combating heaving shales is to obtain a complete geologic report on the proposed area and study it before operations are commenced. The geologist can easily estimate the depths of the possible heaving formations and also estimate whether or not the area in which the well is to be drilled is considered to be a heaving area. The petroleum engineer can advise as to the type of mud to use and when necessary precaution should be made to counteract the shales expected at certain depths.

Definition, Classification, and Causes of Heaving Shales

Exactly when is a shale designated as "heaving"?

Many operators familiar with conditions in the "heaving shale belt" of the Gulf Coast, identify the idea "heaving" automatically with swelling, or more specifically with a certain, excessive bentonitic content of the shale. Shales and other formations in almost any part of the world will occasionally heave or cave in the drilling hole, especially under certain conditions, like prolonged fishing operations or other activities, which highly disturb the normal drilling condition of the hole. It will be readily understood, that neither this second group will come under the classification of heaving shale, nor that the "bentonitic" class can be considered sufficiently broad to comprise heaving shale in all its aspects.

The authors therefore offer the following definition:

Any shale, which sloughs, crumbles or otherwise falls into the hole in excessive quantities during normal drilling operations, is classified as heaving shale.

Classes of Heaving Shale: Many explanations and causes of heaving shales have been given. The authors have analyzed many of the cases in which heaving shales occurred, as well as theories, offering suggestions for the possibility for its occurrence; they have placed the so far recognized *fundamental* causes in the following classification. It should be borne in mind however, that although these causes, here stated separately, can be the sole source of heaving, that usually three

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or more of them are found combined, either in the composition of the shale-fragment, or in the form of variations in the same shale-body.

I. Influences of geologically inherent character.

A. *Chemical composition.* We refer here more specifically to the mineral bentonite, a hydrous aluminum silicate, which absorbs water from the mud so readily, that it swells and presses the shale toward the point of least resistance, i. e. the drilled hole. Depending upon manner of deposition, it is found present either as constituent particles in the shale or in combination with rather pure streaks of bentonite, from miscroscopic laminae to streaks of one-fourth or even one-half inch thick. An excessive bentonitic content results in a sticky shale, which forms a ball around the bit and necessitates manipulations with the drill stem, which only promote heaving (see under II.). Other shales contain bentonite in such small quantities, that they cannot be considered as true bentonitic shales; they acquired their heaving characteristics primarily as discussed in the next paragraphs. A sample of true bentonitic shale, when placed in a beaker of water, disintegrates completely and forms a muddy precipitate on the bottom of the beaker.

B. *Physical properties.* Shales have obtained physical properties, which classify them as heaving shales, as a result of geological structural features, and it so happens, that these features predominate in the Gulf Coast, since they are associated with the main type of structure in this region: The salt dome. We distinguish:

(1) Loss or lack of mechanical strength to carry the burden of the overlying formation; in other words: incompetence. This is sometimes caused by the shale being crumbled into flakes and scales by rising salt domes, especially of the piercement-type, or by the faulting, which accompanies this rising in better consolidated formations. Sometimes the clays are decidedly ductile; in either case a more or less plastic flow towards the hole results, when an attempt is made to drill through these troublesome formations. This type of heaving shale can have any tenacity, from ductile to compact and relatively hard and brittle. Cause of disintegration is in the first place the load of the overlying formations, but it is promoted by the seeping of water from the drilling mud into the minute, capillary cracks in the shale.

This can be observed by placing a sample of this shale in a beaker of water: it falls apart into a heap of flakes and scales under a certain angle of rest, the fragments completely losing whatever coherence there may have existed.

(2) Inclination of strata is another feature, often accompanying salt domes, especially where an overhang is present. Some shales, although possessing heaving characteristics, will not cause considerable trouble when lying flat, but will cave, when lying at an angle. As mentioned before it is even definitely known that, when the angle of repose exceeds 35-45 degrees, shales, regardless of their type, have a natural tendency to slough. The very fact of their inclination at least makes them more sensitive to disturbance, and therefore is an influence, promoting heaving. This condition often goes hand in hand with that discussed in the previous paragraph.

C. *Presence of gas in a shale.* Shales, carrying gas in pockets or in minute cracks are among the most troublesome encountered in the Gulf Coast. When drilled into, pressures tend to equalize, the gas expands and breaks the shale up in fragments, ranging in size from one-half inch to chunks of several inches. Heaves of this type of shale are particularly dangerous, in the first place because they occur without warning: by the time evolved gas, which has cut the mud, reaches the surface and can be detected, the heave already may have taken place and secondly: quantity and total weight of the caving material are apt to be larger because of the larger size fragments set free, as compared to the true bentonitic type of heaving shale and because of the larger sphere of influence around the hole of the expanding gas as compared to the rather gradual absorption of water by bentonite.

This gas-carrying shale and the broken shale, discussed under B-1 are particularly difficult to combat. Both are usually brittle and break down very rapidly, so that there is little time for the mud to build a protective wall around the shale and thus plaster it off. A sample of this gas-carrying shale, when placed in a beaker of water, cleaves along more or less numerous planes, due to expansion of evolving gas, which causes the sample as a whole to increase in volume.

II. *Influences caused by mechanical interference from the outside.* This comprises all the disturbances, more or less necessarily inherent with or promoted by our methods of drilling. The cases, apparently coming under this heading, are numerous. Swabbing action when coming out of the hole with a balled-up bit, or the spudding which may precede it (see under I-A), gas-cut mud and numerous aggravations of caving and heaving by mechanical operations are the usually cited examples in this class. However, it is possible to reduce all these causes to one, viz.:

Creating of too large a pressure-differential between the formation and the hole.

and we distinguish:

A. *Underweight of the fluid-column, either by gas-cutting, over-diluting with water or lack of weight-material.* Underweight of the drilling mud usually means: under the weight, specified by the petroleum — or mud — engineer for one particular case, for instance 11 pounds per gallon instead of 13.5 pounds per gallon. In case of plastic flow of the shale though, the theoretically required weight of the mud may have to be equivalent to the average specific gravity of the overly-

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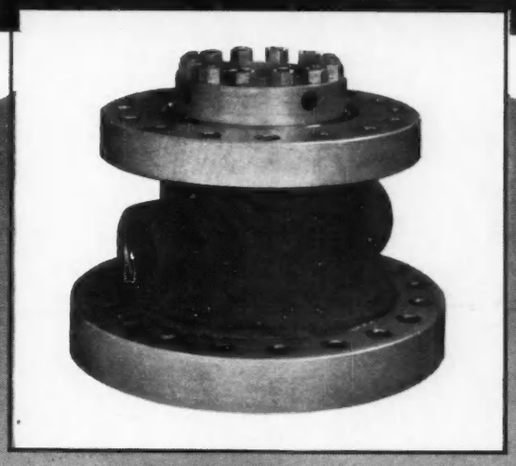
6000 LB. TEST

With the EH-1 Casing Head, the next smaller casing head or the tubing head is supported on a nipple attached to the mandrel coupling.



EH-4 — 6000 LB. TEST

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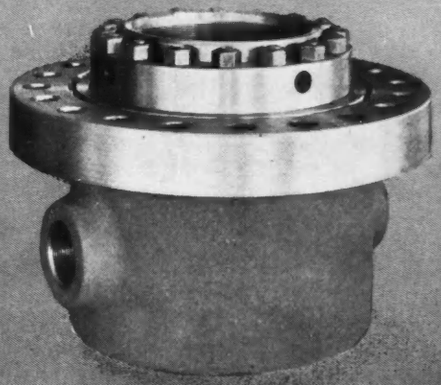
JH-3 — 6000 LB. TEST

Same as JH-1 except for the flange at upper end of the body.



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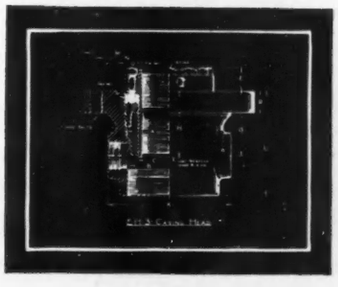

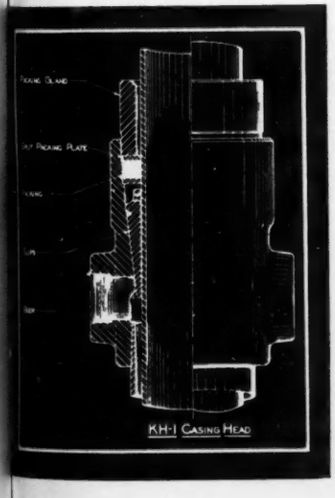

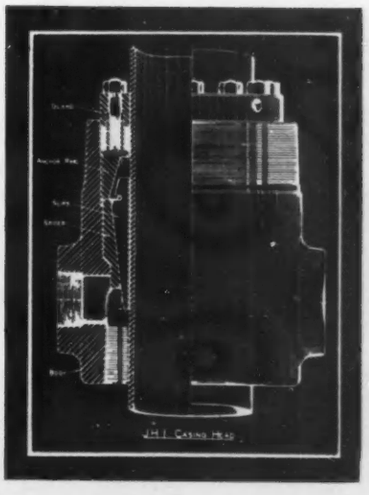

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ing formations, i. e. 2.5 — 2.6 or 20 — 22 pounds per gallon. In such a case even mud-weights up to 18 pounds per gallon would have to be considered underweight. In case of gas-carrying shales, any mud which leaves the hydrostatic pressure in the hole opposite these shales under the pressure of the gas would be termed "underweighted."

B. *Creating of a "vacuum," when spudding or coming out of the hole with a balled-up bit.*

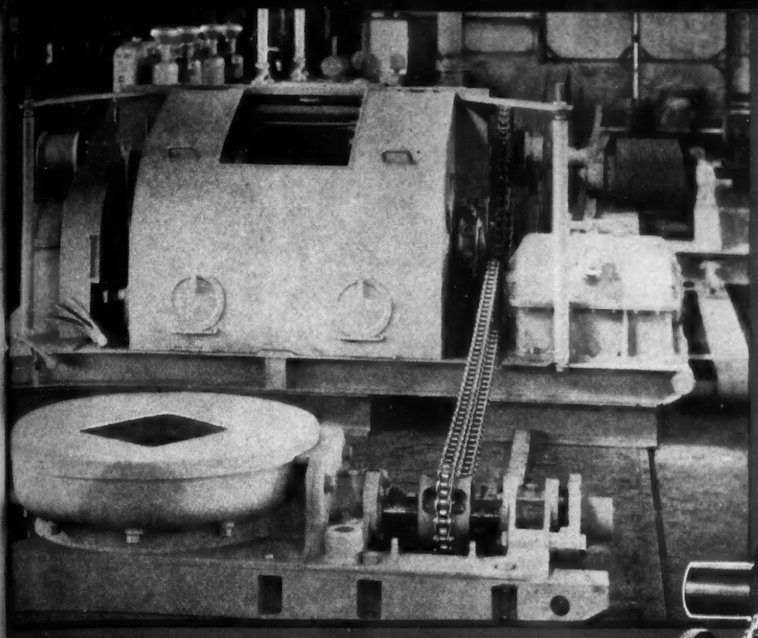
In combating heaving shales, this classification has the advantage, in that it gives us a distinct view, what our chances are in ultimately conquering this subject: the influences named under II are entirely caused by human interference and are therefore possible to be entirely overcome by adaption or modification of our drilling methods; the influences named under I are caused by Nature and they just have to be made the best of with all the ingenuity, efforts and scientific data at our command. In how far we are able to do this, should determine completely the extent to which we eventually will succeed in conquering this problem.

Varieties and Combinations of Causes Given and Additional Factors

1. Shales composed of layers of different hardness; the softer parts, which may be either one of the classes "I" A, B or C, are washed out or slough in, thus leaving the harder strata, which may have no original heaving characteristics at all, as overhanging ledges to fall in.
2. Slatey shales with slatey cleavages, in which the mud tends to work in, promoting slides whenever disturbing factors show up.
3. The term "compressibility" has been used in connection with heaving shale; this is probably equivalent to what we have classified as "plastic flow" (see classification B 1.).
4. Shales with thin, alternating layers of gas-sand, being a variety of the shales, discussed under I C.
5. Insufficient removal of cuttings or heaving material, due to:
   a. Poor mud-qualities, as low weight and low gel-strength. Sufficient weight and gel-strength are absolutely essential for successfully dealing with heaving shale, in keeping the pieces in suspension during circulation yet which change the mud into a plastic substance by gelling, the minute circulation is stopped.
   b. Low upwards velocity of the mud between the drill-stem and the hole-wall, due either to insufficient pump-capacity or to cavities, which decrease the velocity below a critical minimum, with bridge-forming near the base of the cavity as a result.
   c. Discontinuation of circulation. Apart from the fact that the mud, although in fairly good condition, may not prevent all settling out, as long as circulation is carried on, the rate of removal may equal or exceed the rate of heaving; but as soon as circulation is stopped, there is nothing left to balance the latter and circulation, after resumed, may not be adequate to make up for this loss of time or to re-establish the equilibrium.
   d. Negligence, for instance: coming out of the hole before the mud is completely clean of cuttings or shale, or: making more cuttings than the mud-stream is able to carry off, in other words: drilling too fast. This leads to:
6. Insufficient walling-off of the hole-wall as a result of too fast drilling, thus promoting water to seep into the formation and rapid breaking down of the shales, especially those discussed under I C.
7. Anything that may lead to aggravation of the heaving formations, as:
   a. Fluctuations in mud-head opposite the formation apart from the question, whether the mud is underweighted;
   b. Discontinuation of circulation, as far as the change in physical condition of the hole is concerned.
8. Initial movement of heaving shale. This may be prevented by timely recognition of an approaching heaving shale body by means of correlation or otherwise, so that treatment of the mud, before penetration of the shale starts, can take place. Sloughing and caving, once started, tend to become progressively worse and eventually may grow completely beyond control.

So far only the geological and geographical distribution of heaving shales in the Texas-Louisiana Gulf Coast, and their definition, classification, and causes have been discussed.

The second, and concluding, installment of this series will present mechanical and chemical practices in combating heaving shales, and recommend suggestions for a study of the subject. This chapter will appear in the next issue of this magazine.



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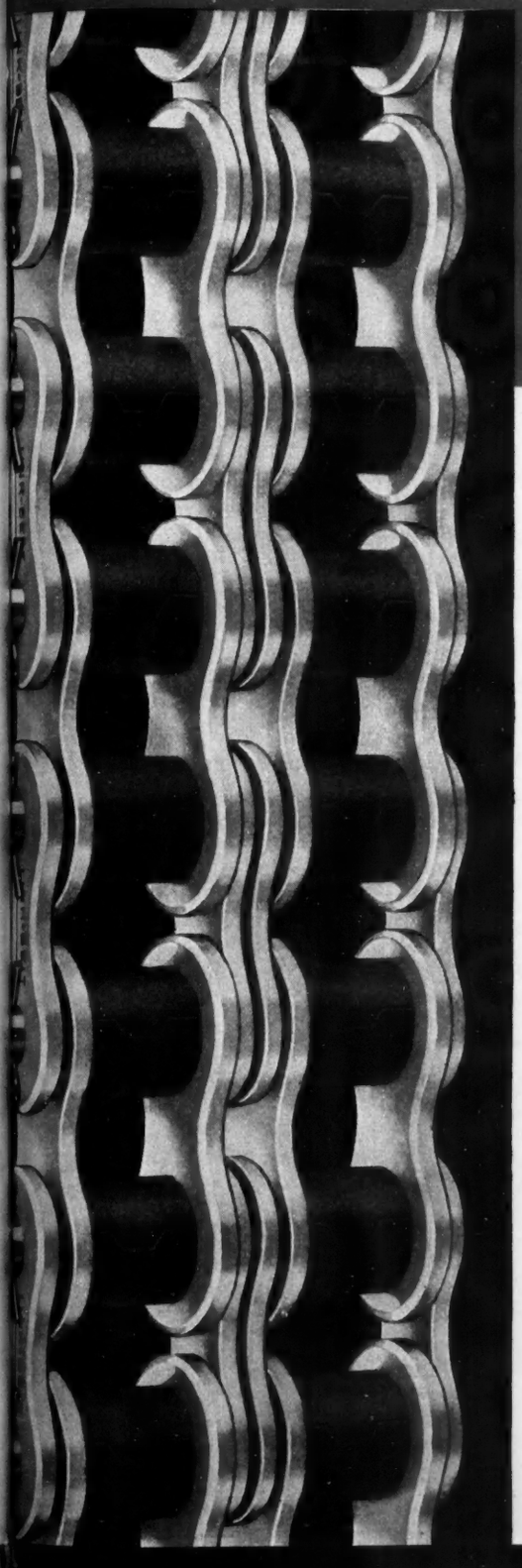

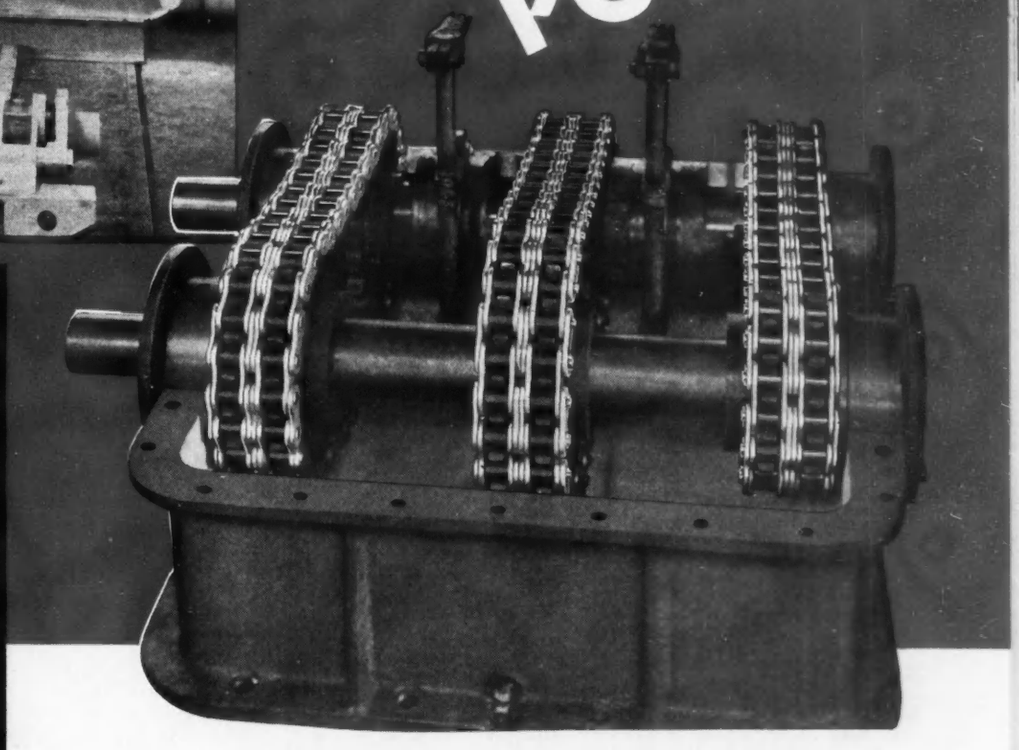

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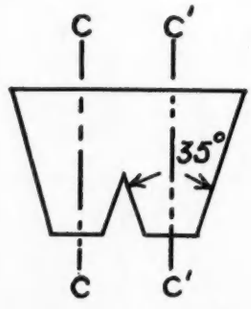
The station received its gas from a nearby gasoline plant after being processed there for the extraction of natural gasoline. The gas entered the suction mains to the compressors at a pressure averaging closely to 300 pounds, upon which estimates and calculations had been based. This same gas, after passing through a regulator, was delivered to the fuel main for the 6-cylinder, 100-horsepower gas units driving each compressor through a V-belt drive.

Output pressure to the wells was set at 800 pounds per square inch, and regulators tied directly into the high-pressure manifold held the engine speed closely at the value to maintain this pressure.

For station identification purposes the units were lettered from "A," on the left, to "F" on the right, when viewing the set-up from the engines toward the compressors. Each engine carried a six-groove pulley on a stub shaft flanged to the flywheel face, an outboard bearing taking the pull of the six style "E" V-belts driving the compressors. Five of these V-belt drives operated smoothly and with practically no belt wear. On unit "B" the second belt from the engine wore out completely after only 65 days of service. On the assumption that the belt had been faulty in some way, as none of the others showed signs of failure, a new belt was installed, the engineer in charge being careful to place this new belt in the same grooves in which the one failing had operated. Twice more, at intervals of less than 8 weeks, this same belt failed. In each case the sides of the V-belts were examined and cleaned of the bits of rubber which stuck to the sides of the particular groove having the trouble as though vulcanized there.

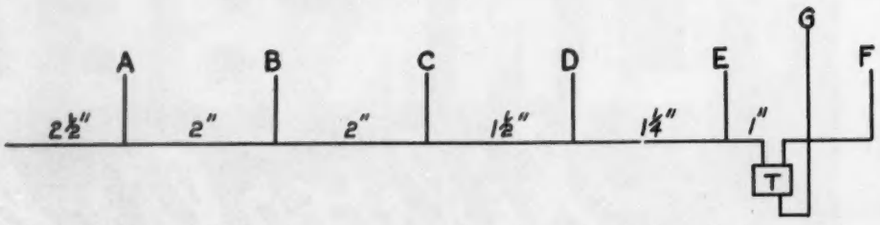
After the third belt failure a simple template was made for testing the suspected groove on the engine or drive pulley, as it was at this point that the rubber from the belts adhered. Since belts measuring 1-19/32 inches across the outer face and 29/32 inch in depth were used, the center lines of the two truncated sections of the template were spaced 1¾ inches apart, corresponding with standard V-belt design. Checking the grooves in the engine pulley with this template, it appeared that the sides of the suspected grooves did not have the same angle as that of its neighbors. The template, cut to fit a groove angle of 35°, fitted closely all grooves but the one causing the trouble, contact in this groove being only at the outer edge.

Further checking of the groove showed that, through some error in the manufacture of the pulley, it had been turned out with five of its grooves having the proper angle, while the other had an included angle of only 27° between the sides. The V-belt, forced into this groove by the belt tightener, took all the load on the upper, outer or tension section, being wedged tightly in the almost parallel walls of the groove and then strained severely as it was



Sketch of template for checking V-belt pulley grooves. C-C and C'-C' represent center lines of adjacent belt grooves. Correct angle of groove—35°. Correct center distance—1¾ inches.

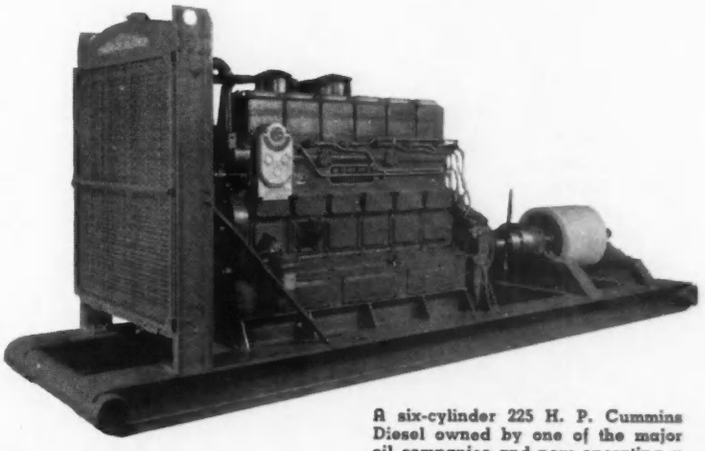
Diagrammatic layout of gas mains to engine regulators. Main line sizes are shown. All vertical lines to regulators on each engine are of 1-inch pipe. The original main is indicated by dotted line between risers "E" and "F." "T" represents bottom vented trap and separator.



Equally FLEXIBLE— ECONOMICAL

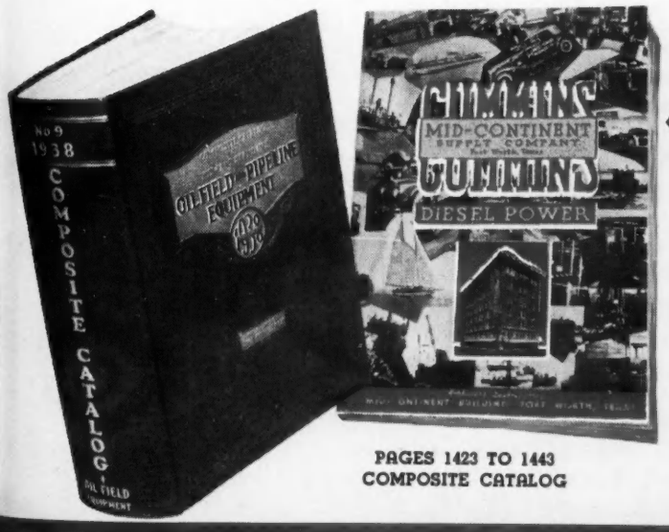
K. W. Davis, President of Mid-Continent Supply Company, and C. L. Cummins, President of the Cummins Engine Company, with diesel powered automobile.

The diesel powered automobile at the left traveled from Columbus, Indiana, to Dallas, Texas, (1,050 miles) at a total fuel cost of $3.15, using only 35 gallons of nine-cent furnace oil. You can effect similar economies with Cummins' "Oil Field" power.



A six-cylinder 225 H. P. Cummins Diesel owned by one of the major oil companies and now operating a rotary drilling rig in West Texas.

CUMMINS *Dependable* DIESEL



PAGES 1423 TO 1443
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pulled free of the groove at the end of the arc of pulley contact. On the driven pulley the V-belt was then carried in a groove of proper shape, the belt being subjected to a continuous and serious kneading action as it passed over one and the other of the pulleys, with the resultant short life. Replacing the faulty drive pulley with one correctly grooved ended the problem of belt failure.

Engine Cooling Trouble

With the onset of cold weather, unit "F" began to run noticeably hotter than its mates. Where the others required from one to three gallons of make-up water for the cooling systems during a shift, this unit would demand as high as 20 gallons, or as much as the total capacity of the combined jacket and radiator system. Since the overheating shows up almost immediately after a check-up and overhaul of the unit's ignition system — dual magnetos and twin spark plugs—it was believed that some error had been made in setting the timing of the magneto lay-shaft, but a careful check-up at this point showed no deviation from earlier operation.

As a second possible cause of the trouble the cooling system was thoroughly flushed out, all connections to the cylinder jackets being broken and clear passages established there. The radiator was dismantled and the tubes cleaned with a wire brush, the fins being soaked in a hot cleansing solution and blown clean with compressed air. After reassembly, the excessive evaporation continued, and a check-up of the engine valves was ordered.

Inspection of the exhaust valves pointed to excessive heat in the waste gases, although the mixing valve was set so as to give as lean a mixture as consistent with the varying load imposed on the compressors.

Although the smooth operation of five units seemed to clear the fuel gas supply from suspicion, study was next directed to that factor. The gas main entered from the left of the station, as a 2½-inch line, the riser for unit "A" being in the side of a 2½ x 1 x 2½ Tee. From this Tee the line continued as a 2-inch pipe as far as the riser for unit "C," where reduction to 1¾-inch was made. At unit "D" the line became 1¼-inch, being reduced to 1-inch at the Tee from which riser "E" took off, and continuing this size to the regulator for the last unit, "F."

An experimental change in the piping system located the trouble. A trap "T" was cut into the original gas line near the point where the final reduction in line diameter was made, a riser "G" coming above ground from the drain of the trap. On the extreme end of this line was fixed a valve with a gooseneck pointing downward. By manipulating the valve on this ⅜-inch line the trouble was found. During ordinary operation, with the engines operating under comparatively light loads, the gas flow through the fuel main was steady, but when one of the larger leases was tied in, there was a sudden pick-up in power demand which sometimes doubled the fuel consumption over a matter of seconds only.

When suddenly called upon for full power, the accelerated flow of gas through the main would tend to pick up the small accumulations of gasoline separating out from the gas at each of the reducing Tees, being carried on through the line to the following Tee, and eventually all the accumulated fuel being carried into the mixing valve of unit "F," there to enrich the mixture to the point where the cylinder charge was excessively overheated if not actually burning at the end of the power stroke.

With the trap "T" in operation, and blown down periodically, the excessive evaporation of cooling water on unit "F" was halted, and the service life of the exhaust valves on this unit extended to that of the valves in the other and more fortunately placed engines.

Cooling System Improved

As originally installed, the radiators were set up in the same relation to the engines as is customary in automobile practice, with the fan drawing air through the radiator and blowing it out over the engine. This scheme resulted in excessive heat for the units, with consequent rapid deterioration of insulation on wiring, as well as carrying great quantities of dust through the radiator and depositing it on the engine to the detriment of bearings, fouling of the suction air cleaner, and overheating of parts dependent upon air contact for cooling.

The alternative of reversing the direction of fan rotation, so that it would force air from the engine side of the radiator through between the tubes and outward—instead of sucking air through between the tubes and discharging it out over the engine — merely transferred the dirt from one engine to its neighbor, and made it difficult to stand near a unit even for simple adjustment jobs. This also directed a hot, dry blast against the V-belt drives between engine and compressor, and caused bearing troubles on the belt tighteners.

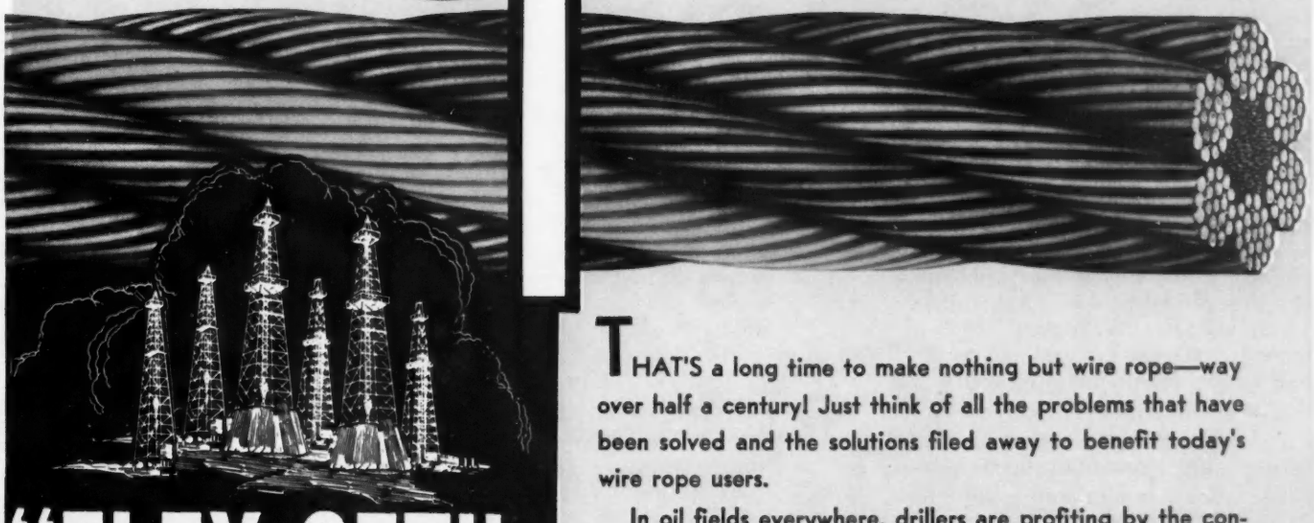
Believing that the reversed air circulation was desirable, it was planned to move each of the radiators from in front of its unit to a position 90° from its original setting, so that the air blast from each of the radiator fans would be away from the row of engines. Since the units had been spaced rather closely—to cut down the amount of interconnecting piping to a minimum —the radiators could not be pivoted on one corner to take the desired facing, without almost blocking the working space at each power takeoff. Setting the radiators at the new angle, but away from the engine foundations involved relocating the incoming fuel line—buried below the station floor—as well as otherwise interfering with station lay-out.

The radiators being thus practically fixed as to location, the direction of the hot air blast was changed. This was accomplished by adopting an idea noted in another similar station: that of attaching deflection vanes to the front of the radiator. These vane sets, made up by welding a series of 45° curved vanes to top and bottom plates, were bolted on the face of each radiator. Impinging on the curved faces of the vanes, the direction of the hot air stream is gradually changed from perpendicular to the radiator front to one at 45° thereto, and the blast directed past the power end of the next unit. With vanes installed, the working conditions within the station were immediately bettered, with but slightly increased radiator temperatures noted as a result of somewhat restricting the flow of air from the tubes.

Periodic cleaning of these deflecting vanes is necessary to prevent the building up of oily dust masses which would tend to restrict air circulation. This cleaning is done with a wire brush on the end of a short suction hose, a partial vacuum being secured through the use of an ejector on the ordinary station air supply.

Since ironing out the design and installation "kinks," the station has been operating with only routine overhauls, and with a V-belt life of from 8 to 10 months on 24-hour, 7-day running under loads up to 150 percent of rating.

62 YEARS



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V-13R-1

Snow-Proof Houses Prevent Hampering of Pumping Work

By JOHN C. ALBRIGHT

IN areas where wind storms whip up snow or dust, precautions must be taken to prevent hampering of oil field operations. Continental Oil Company has solved the problem in the Frannie oil field of Park and Big Horn counties, Wyoming, by construction of snow-proof engine and belt houses for its pumping wells.

The Frannie field is located east of the Yellowstone National Park, where high mountain peaks and ranges of lesser mountains cause terrific wind storms. During the winter, fine snow will seek every cranny to drift over belts, motors and bandwheels to cause trouble. Chinking of cracks with waste and rags is a common procedure, but the Continental superintendent had an idea that a snow-proof building could be erected.

He had no other materials than the ordinary corrugated sheet metal and wooden frames. But in designing his buildings, he gave thought to means of excluding the snow from the concrete flooring to the very roof. The result has been successful, although he so closely followed the usual design that from outside appearances a casual observer would note no difference between these buildings and the usual oil-field engine and belt shed.

The first consideration was given to the concrete foundation, and when the forms were placed in position for pouring the material, a 2 x 2 inch plank was nailed to the upper side of the outside board to cause a recess in the upper edge of the wall—which is of ordinary height—to seal the lower side of the wall when finished.

The next objective was laying out

The engine room and belt house developed by employes of Continental Oil Company in the Frannie field of Wyoming to exclude fine particles of wind-driven snow looks like the ordinary pumping well shed found everywhere. This type of construction would be ideal for use in the "dust bowl" of Kansas and Texas.

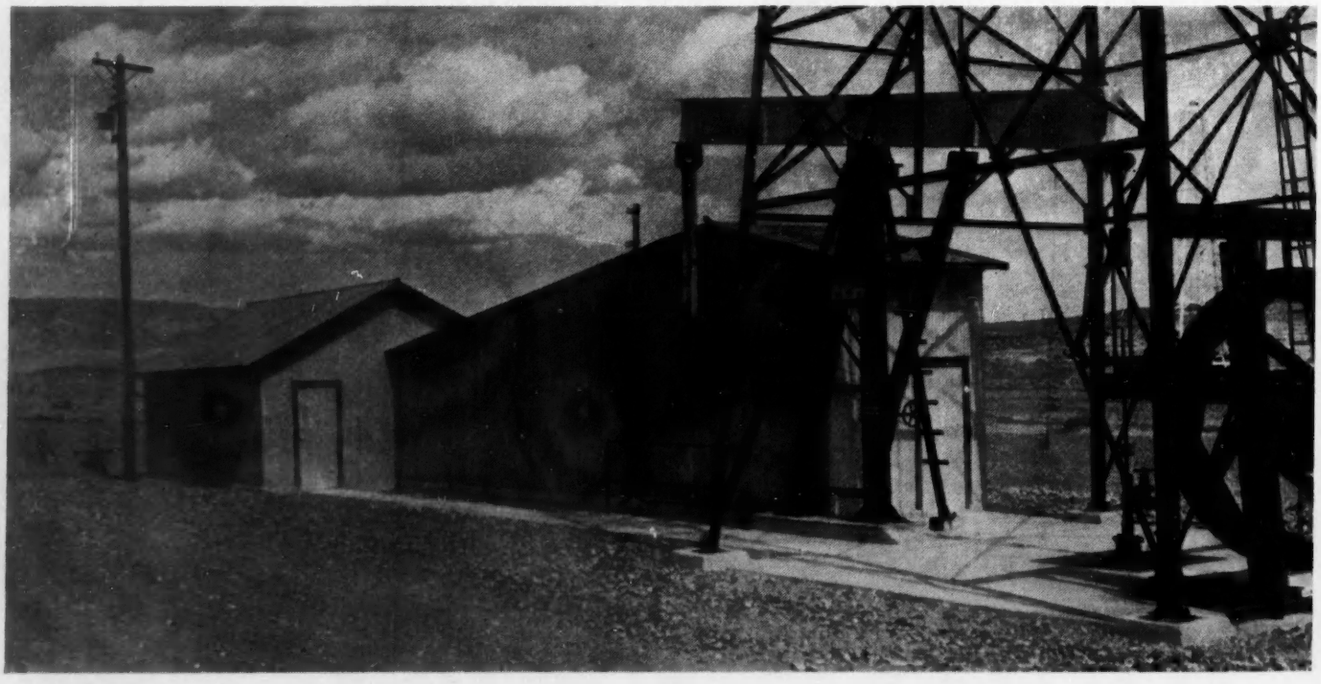

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Chart shows compartive fluidity of Inferno 16.0 lb. slurry at 200 degrees

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Inferno's low viscosity makes it easy to pump in heavy slurries. It is easier to mix than Standard Portland Cement. It is a true Portland Cement containing no admixtures. It sets slowly yet hardens quickly—developing a high compressive strength in one day. Buy this low-cost protection against cementing failure for your next deep well cementing job.

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the frame of the engine room and belt house so that the usual width corrugated iron siding would lap one corrugation at each vertical studding. The frame of the structure was erected after securing the bottom sill to the concrete wall with the usual bolts, which as yet showed no radical departure from the run of the mill buildings. Each side sheet as attached to the walls was of the same length, purchasing material of even lengths to avoid cutting on the ground.

As the individual sheet was nailed to the studding, the lower end rested on the 2 x 2 recess in the foundation, and, before laying the succeeding sheet, ordinary plastic roofing cement was placed in the corrugation which lapped over the one already set up. A glazier's putty knife was used to spread the narrow ribbon of plastic on the side sheet, allowing a consistent thickness to be spread evenly the full length. Placed in position immediately, large headed nails were driven at regular 4-inch intervals, which pulled the sheet evenly and snugly to the one in position. The spacing of nails was one of the features of snow-proofing, as it was determined from experiments that 4-inch centers for nailing caused the plastic to squeeze evenly along the entire joint.

As soon as side sheets were nailed in position, a soft piece of 2 x 4 was secured and placed directly over the upper edge of the corrugated steel, and driven gently and firmly over the sharp ends until about ¾-inch of the steel had penetrated the timber. As extreme care was exercised in setting the sheets so that none extended beyond its neighbor, and by consistent driving upon the soft wood, the upper plate is level enough that slight planing will smooth it down.

Essentially the same procedure was followed when laying the roof, except that "V" crimp steel was used, which offered a comparatively flat surface at the contact between rafters and steel, and steel and wall plates. With rafters notched so that the upper side of the wall plate was on a common plane with the upper side of each rafter, laying the roof was a simple matter. However, plastic roof cement was laid at each joint between steel and steel, and between steel and wall plate before nailing in place. After walls and roof were completed, additional sealing was required to completely snow-proof the structure.

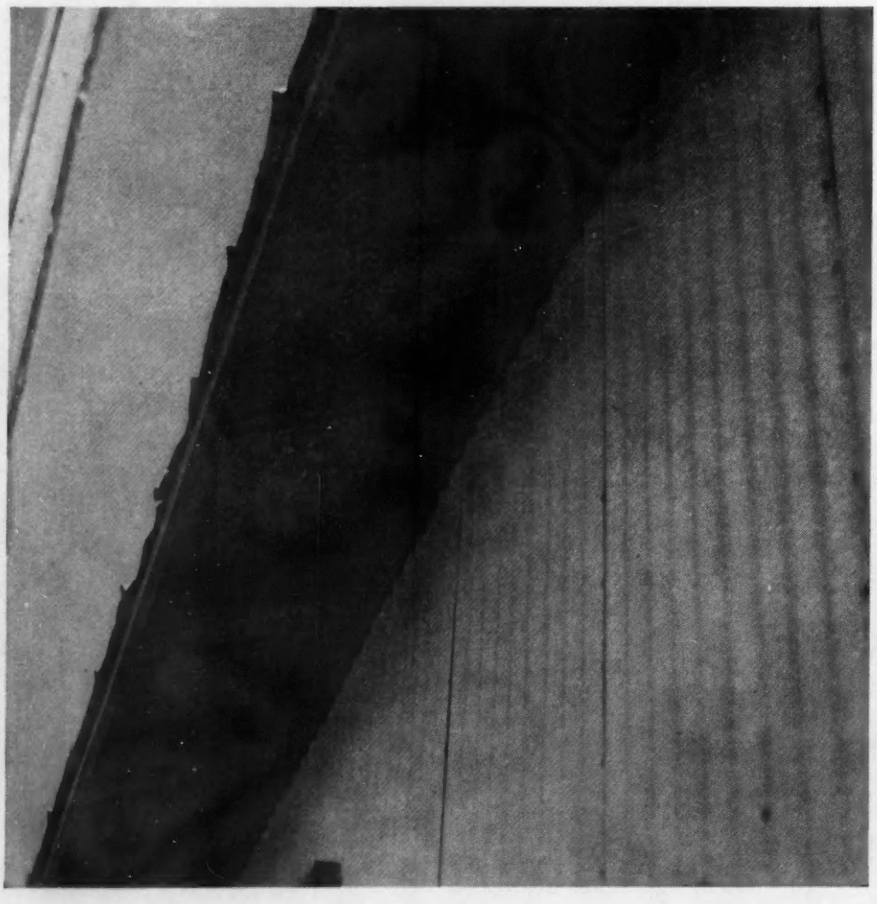
Where the lower ends of the side sheets encounter the 2 x 2 recess, neat cement was poured from the inside of the building until it was flush with the top of the foundation. Care exercised when setting wall sheets prevented cracks which would cause neat cement to run from the 2 x 2 recess. Where the "V" crimp roof contacted wall plate, plastic cement was forced into what cracks showed, and, in the "V" crimp itself, small triangular pieces of wood were driven, after coating wth plastic, into the crimps to seal that point.

Windows were boxed in with a recess on the inside below the water table to include neat cement at this point for sealing. At sides and top, plastic cement was used whenever possible, but where larger recesses could not be avoided, neat cement was used for sealing. Where windows were intended to slide open for ventilation, felt weather stripping was used to exclude snow and dust. Doors were cut true for each opening and hinged so that they closed tightly and without sagging. Felt weather stripping was used on building or doors to complete the job of sealing at these points. And where shaft of rig irons extended through side of belt house, soft material was attached to prevent scoring of metal, and at the same time prevent egress to sand and snow.

It is said that the cost of building such a structure does not exceed that of the ordinary building, excepting a small amount of additional time in carefully setting side sheets and placing studs and rafters, and a few more pounds of nails and plastic cement. During the past winter, the first which this type of structure passed through, most of them contained only a small handful of drifted snow, which was said to enter through neglected cracks, or those which were not sealed properly.

The benefits derived from such buildings are: clean sheaves; pulleys and band-wheels; no slipping of belts; and uninterrupted pumping of oil, which, by regular production undoubtedly compensates for the extra material and time expended on construction.

Details of the side paneling of corrugated sheet metal, which are sealed at the top by driving soft 2 x 4 timbers over edges of the sheets to make the housing snow proof.



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Trinidad Progressing Rapidly in Exploration and Technical Work

By VICTOR BRYAN, LaBrea, Trinidad, B.W.I.

TRINIDAD at the present time is more than ever before a bustling hive of petroleum activity in all directions. Ambitious programs of expansion both in the field and refining places have mapped out a plan of development which, when completed, should leave the island in quite an enviable spot on the oil map of the world.

This considerable activity is no doubt the result of some fuller appreciation of the strategical importance of Trinidad oil supplies to the British Empire both in times of war and peace. The oil resources of the island, far from approaching exhaustion as was rumored several years ago, have undoubtedly been substantially increased both by lateral exploration and the progressively deeper drilling of the last few years. This improvement which has been going on unabated from year to year for the past several years still continues, and is even gaining in tempo day by day. Evidence for instance the following figures of yearly production obtained since the old depression cloud drifted over:

	Barrels
1933	9,561,353
1934	10,894,363
1935	11,671,224
1936	13,237,030
1937	15,502,989
1938 (9 months)..	12,973,885

Probable total for the complete 12 months of 1938, should be 17,550,000 barrels (minimum).

All this activity calls of course for concurrent advances in operating equipment and production technology, along with which a considerable amount of exploratory survey work has to be carried on in the endeavor to find and establish new fields and more prolific horizons. In this latter connection it is significant to note that during 1937 and 1938 the Seismic method of geophysical survey has been gradually superseding the gravimetric methods which were mainly in use previously. At the present time several Seismic parties are engaged on full time work in various parts of the island.

The discovery of new production in the Coora and Penal fields has given a big boost to exploration activities in surrounding areas and also has repercussions on refining activities which demand immediate and elaborate extensions to certain refining plants and storage and shipping facilities.

Another significant factor along these lines which comes through from

The accompanying review of Trinidad's oil achievements during the first nine months of 1938 and its technological progress definitely illustrates the bustling hive of activity, as well as ambitious expansion programs. The author, Victor Bryan, graciously agreed to its preparation so the industry at large might know of the important developments taking place in Trinidad.

The article forms an excellent background for the additional material that will present Trinidad's picture in more detail and which I will be able to procure during my stop on the island when enroute to the United States.

A review of actual operating results achieved during the first half of 1938, with comments on the probable trend of the then immediate future in special reference to exploration activities current and contemplated appeared in The Oil Weekly of September 12. The present intention is therefore to look back on the first 9 months of 1938 just completed and to endeavor to tie up results as much as possible with conditions obtaining at the end of 1937, in the light of general improvements made in drilling and production practices brought about by the intensive exploitation and exploration work being pursued. Regard is accordingly also paid to the more general effects these activities are having on the type of drilling and production equipment used.
W.V.GROSS, *Foreign Editor*

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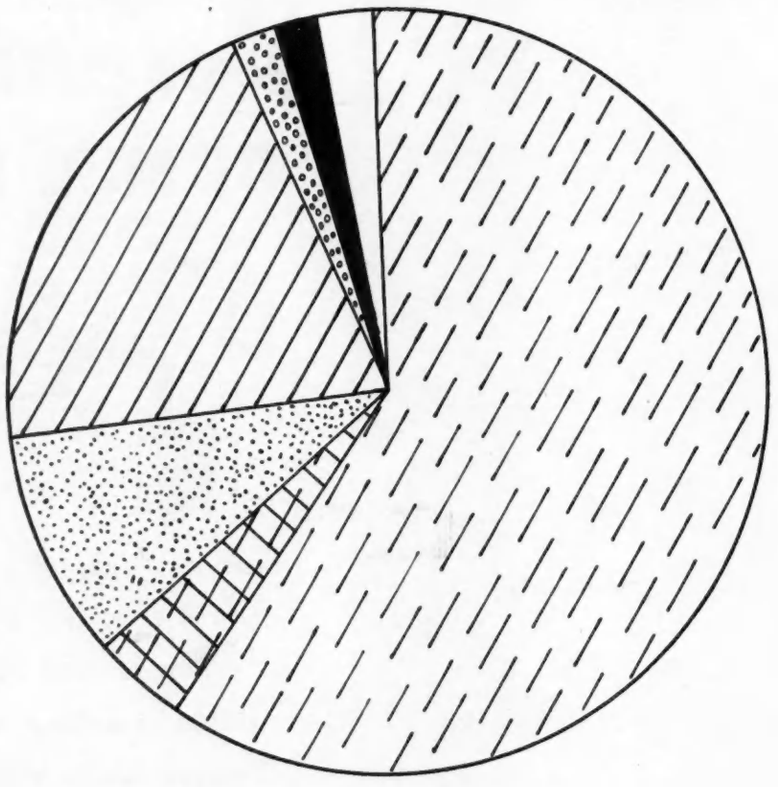
Relation of Trinidad Mineral Exports to Agricultural Exports



the year 1937 into the period of 1938 just passed is the elaborate preparation being made to find a new oil field in the Northern Basin, i.e., the central one third portion of Trinidad from the foot of the northern range of hills to the northern boundaries of the southern one third portion. The southern one third is the present oil-producing area of the island. Almost the entire area of this basin is being mapped geophysically by seismic methods and the drilling of the first well for which preparations were being made at the end of September will mark the actual commencement of a search which may be destined to radically repaint the whole picture of petroleum potentialities of the island as we know it.

And so in looking back on the first 9 months of 1937 as compared with the first 9 months of 1938, the whole panorama of progress can perhaps best be observed from a comparative tabulation of the significant indices of footage drilled and production obtained month by month.

The relevant tabulations are accordingly set out hereunder:

The comparative table of footage drilled month by month:

	1937	1938
January	75,996	78,753
February	64,958	84,822
March	77,417	79,632
April	72,619	74,722
May	85,426	76,825
June	52,905*	72,200
July	66,273*	77,544
August	93,347	72.416
September	80,465	70,000†
	669,406	686,914

The comparative table of production obtained month by month:

	1937 Barrels	1938 Barrels
January	1,263,456	1,378,021
February	1,157,668	1,304,819
March	1,287,097	1,438,436
April	1,301,250	1,418,825
May	1,351,198	1,481,285
June	928,752*	1,431,476
July	1,377,549	1,500,171
August	1,433,474	1,505,959
September	1,358,600	1,514,893
	11,459,044	12,973,885

* Effect of 1937 labor strike. † Estimated.

Summary

	First Nine Months 1937	1938
Total footage drilled	669,406	686,900
Total production obtained	11,459,044	12,973,885

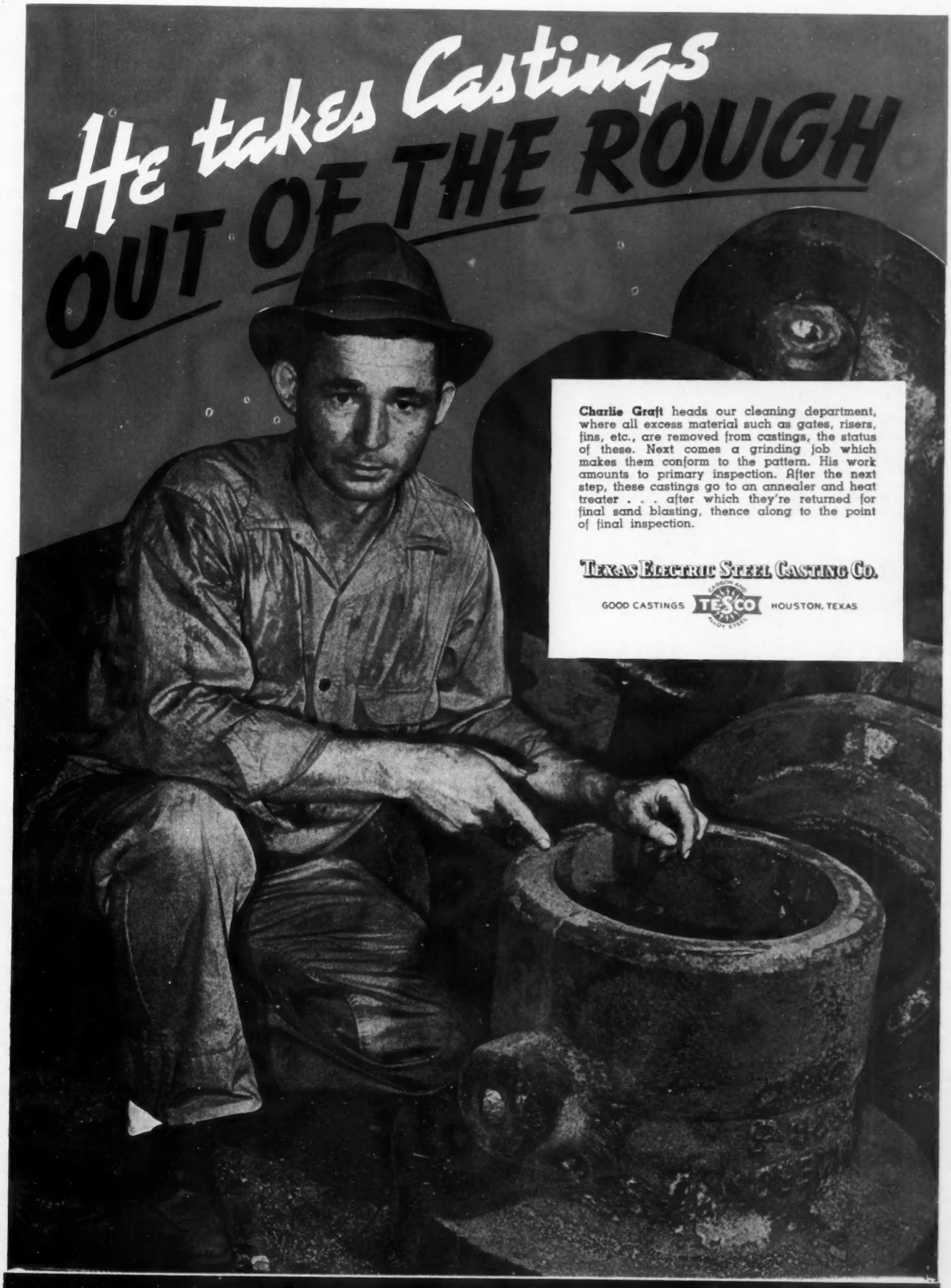
Refining Capacity

The total present capacity of refineries operating in the island amounts to around 18,000,000 barrels per annum. During 1937, a total quantity of 15,111,000 barrels of crude oil was refined locally. 1938 figures when available should show that refineries will have been operated more nearly to full capacity during the current year.

The total main tank storage space for petroleum in the colony which at the end of 1937 was in the vicinity of 4,515,000 barrels should by now have improved to around 5,000,000 barrels, with a program of tank building on certain fields which is destined to improve materially on these figures in the near future.

The average daily number of persons employed in the oil and asphalt

He takes Castings OUT OF THE ROUGH



Charlie Graft heads our cleaning department, where all excess material such as gates, risers, fins, etc., are removed from castings, the status of these. Next comes a grinding job which makes them conform to the pattern. His work amounts to primary inspection. After the next step, these castings go to an annealer and heat treater . . . after which they're returned for final sand blasting, thence along to the point of final inspection.

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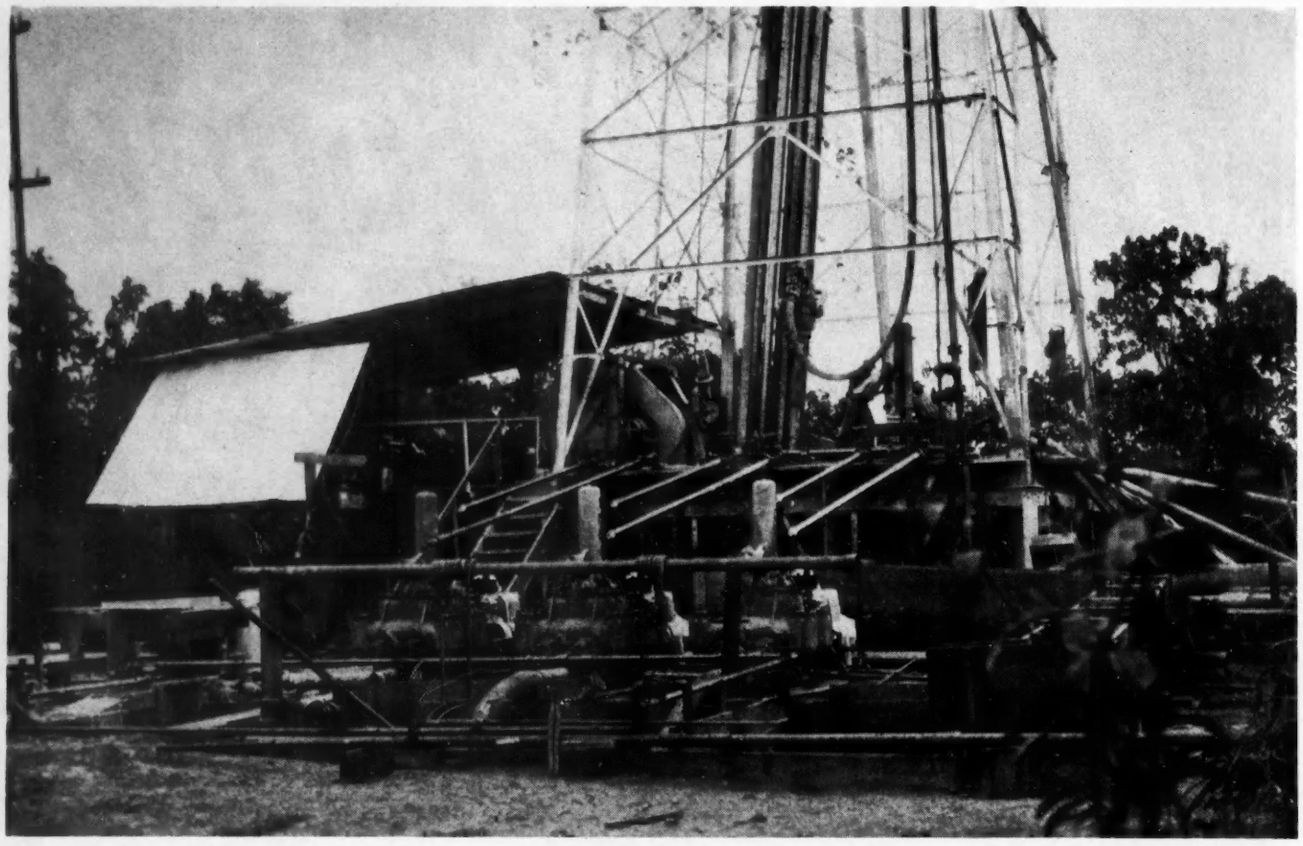
GOOD CASTINGS TESCO HOUSTON, TEXAS

TESCO STEEL IS GOOD STEEL!



A typical deep exploration rig in the Trinidad jungle. The derrick is 122 feet in height. The engine is a 12x12 roller-bearing oil-bath twin steam unit. The slush pumps that are 14x7¼x16 are being used. The capacity of the draw works is 10,000 feet. Three boilers of 125 horsepower each that operate at 300 pounds working pressure provide the power.

industries was approximately 10,100 during the year 1937 and, if anything, should have improved by some 5 percent or more during the year 1938.

The proposed marine drilling operations which has been in the melting pot for some time still awaits settlement of the deadlock between the government and the local oil company applicants which was reached over the government proposals for the establishment of one joint operating company to handle all marine concessions. The industry, however, seems to have a considerable deal to go on with ashore the while this controversy simmers on.

And so, with this general picture of the situation before us, we come to a light dissertation of operating conditions within the industry with special regard to the effect created on operating equipment and technique as outlined in the prelude to this article.

Drilling

At the end of 1937, the average number of drilling rigs operating on the island was 36. From all evidences, this number should now be something like 40 to 42. Record drilling depth in any one well so far is around 9040 feet. Based on 1937 drilling results, coupled with the achievements of the 9 months just passed, drilling depths can perhaps be ranged on an average scale as follows:

About 66 percent of all wells are being completed between 2500 and 5000 feet; 20 percent between 5000 and 6000 feet; 9 percent between 6000 and 7000 feet, and 4 percent between 7000 and 8000 feet; while only 3 or 4 wells at most will cross the 8000-foot mark. In all some 300 and more wells will have been completed during the year 1938 by the time the end of December rings the curtain down on this year's drilling performances.

The average drilling rig locally makes in the vicinity of 1800 to 2100 feet per month. The greater part of this drilling is done through soft shales and sands with occasional layers of hard rock, sandstones and sticky shales. Pressures, however, are invariably abnormal, being in some instances (and at comparatively shallow depths) almost twice as much as the pressure that would normally be expected. These abnormal pressures of course call for the use of extra heavy drilling fluids and a mud weight which not too infrequently has to be stepped up to as high as 125 to 140 pounds per cubic foot. Such pressure conditions are taken as a matter of course in routine Trinidad drilling. Although the remedy for these hazardous conditions is fairly well settled by mud weight and larger circulation volumes, operators have looked with interest at local attempts which have been made at intervals to work with pressure-drilling equipment. While it is not believed that this procedure has been finally ruled out as unadaptable to Trinidad conditions, it is significant nevertheless to note that no appreciable amount of success has been met with and that all efforts have not been pursued as far as one would have expected. This method of drilling is one of the things that can stand a great deal more of examination with a view to its successful adoption on local fields.

As is to be expected, heavy muds

and large circulating volumes call for greater steam pressures and sturdier pumps, and the effort to meet these requirements can be seen in the instances of more powerful boiler batteries, the gradual tendency towards importation of boilers with capacities in excess of the usual 125-horsepower type and the installation in some places of superheaters to provide the necessary power for the bigger pumps which are being used wherever conditions permit.

In this connection, however, it is necessary to point out that the attainment of improved efficiency in the matter of drilling equipment is in some appreciable measure handicapped by the transport difficulties with which operators are commonly faced in carrying equipment to the location site in several territories. These difficulties are invariably set up by weather conditions and also in a great measure by government safety regulations which in turn are dictated by the narrow roads and inadequate bridges over which a large portion of the island's drilling machinery must be transported before it can be put into operation. This difficulty is, however, gradually being eliminated by the application of considerable foresight in new road building and the improvement of older ones in such a manner that a gross weight of about 12 tons could be accommodated across bridges on important oil field routes.

Follow U. S. Practices

It is well known that in line with other countries, Trinidad follows closely the lead of the United States in the matter of drilling and production equipment and practices. Whatever established improvements are found on U. S. fields today will be found in Trinidad fields before tomorrow is far gone.

Unitary draw-works is more or less standard equipment with the larger operators and it has been noted that one U. S. supply company supplies a special lightweight draw-works which is finding great favor among local operators on account of the transport advantages thus offered.

The increase in the use locally of rotary tables with directly coupled engines has found favorable comment all around.

On account of the heavy program of exploratory drilling, both contemplated and actually being carried out, the Diesel drilling unit is coming into increasing prominence because of inadequate water supplies.

The trend towards scientific precision in all drilling work is by far one of the most important factors intended to promote the high standard of all-round efficiency which is necessary for the speedy and successful accomplishment of the ambitious programs which are in hand. There is now very little really of the "chance-taking" flair with which operators were quite familiar only about 7 or 8 years ago.

Stress is now being constantly laid on the importance of a high standard drilling mud, and the matter of the weight and viscosity of the drilling fluid is now as much the concern of the driller himself as of the supervising petroleum engineer. Mud screens of different types are almost in general use on the larger fields.

The electrical formation logging device is in routine use in all fields in the island, although a good deal of mechanical coring is still of course done mainly for the acquisition of paleontological evidence and for the securing of samples for laboratory research work. The wire-line coring device has evidently been an asset in this direction, at least from the viewpoint of time saved in round trips, etc.

Straight-hole drilling, with its consequent good effect on completion practices, and the lessening of wear and tear on production equipment, is also a pet hobby of the local operator. Deviation tests are generally made at frequent intervals and it is generally appreciated that ample compensation for the slight delays thus entailed is invariably provided by the insurance thus taken against casing and production troubles due to crooked holes. Besides there is always the satisfaction that more reliable interpretation can be put on the geological records obtained with straight-hole drilling.

On the other hand, however, intentionally controlled deviated drilling finds its place with impunity wherever necessary.

Formation testers are also in evidence in some fields; this no doubt due to the sporadic occurrence of some Trinidad oil sands which makes this equipment quite useful in the orderly and scientific development planned.

Multi-stage cementing jobs are now almost a matter of routine in some fields.

Operators are in several instances more and more inclining to the practice of casing and cementing off oil sand sections after they have been drilled through and then later perforating by electrical gun opposite the various sands in convenient order. And when, with regard to Trinidad conditions, it is remarked that two or more oil sand series are likely to occur only within a few hundred feet of one another, this method of well completion seems to offer a certain amount of convenience which is not quite so possible under the older methods.

Production

In the matter of production practices generally, the scientific trend is perhaps even more in evidence than it is in the drilling department. The production of a certain objectionable amount of sand, gas and water along with the oil is a problem which has to be constantly faced in several important fields.

Efforts to combat this unwanted sand, gas and water above referred to have resulted in the establishment of large field laboratories which are engaged daily working on possible solutions for an abatement of these difficulties which are a concomitant of Trinidad oil production in most areas. The merits of slotted pipe and different types of screen pipe in fighting the sand problem particularly has been the subject of much discussion and comment on the island.

Certain areas in Trinidad experience considerable difficulty in finding a lasting solution for their sand problems. Fine sand is present in heavy and viscous oil in some areas. Under these troublesome sand conditions that constantly impede the production of oil, several fleets of winch tractors are of necessity in concentrated daily use in order to keep wells going. The type of equipment most suitable for this rescue work under local conditions is another interesting subject on which Trinidad operators are invariably willing to be advised by advanced foreign opinion.

And from this we step to the all important question of gas conservation and the preservation of natural reservoir energy in the effort to use natural lifting power to the greatest advantage. Not only are Trinidad operators now generally agreed on the conservation principle of production, but indeed there has for the past few years been the safeguard of existing government regulation which is aimed at preventing the waste of the natural gas supply on Trinidad fields. The great majority of all Trinidad oil fields are motivated by gas energy, although there are a few older areas which are to be classified as being under water drive.

The enthusiasm displayed locally in the matter of natural energy conservation can best be evidenced by the care generally taken to equip and

complete wells in such a manner as to ensure their being brought on production initially with the most efficient gas/oil ratio possible, and then the exercise of strict control in the production of these wells to insure the maintenance of the reservoir pressure as far as possible, or at least to allow that the inevitable pressure decline is as uniform as possible throughout the reservoir.

In addition to this tendency toward the maintenance of reservoir pressure in new areas, attention is also being paid to the question of returning gas to the ground for this purpose in certain new areas and for the repressuring of certain older and partially depleted areas from which oil has for several years been extracted without the benefit of the conservation motive. So far repressuring efforts in evidence hinge directly on the injection of gas into the ground through specially selected old wells or specially drilled new ones with the intention of agitating and bringing to the surface the "dead" oil remaining in the ground.

Local opinion on the advantages of such projects is considerably divided, some geologists contending that in some of the more complicatedly faulted areas which are so common in Trinidad the gas is likely to become entrapped and in the end indeed serve only to set up a resistance to the migration of oil to the surface.

However, there are several thousands of dollars tied up in elaborate compressor installations, etc., in connection with these projects and the future adoption of such additional schemes locally will most likely be dependent solely on what inducement the resulting economics as experienced with present installations may have to offer.

The following table gives an analysis of the average number of producers per month during the year 1937 and a comparison with the two previous years, the figures for 1938 of course not being yet available.

	1935	1936	1937
Wells flowing	235	273	357
Wells pumping	466	469	491
Wells bailing or swabbing	146	140	139
Wells on air or gas lift	105	107	100
Wells on plunger lift.	8	38	68
Wells on displacement pump	14	14	15
	974	1041	1170

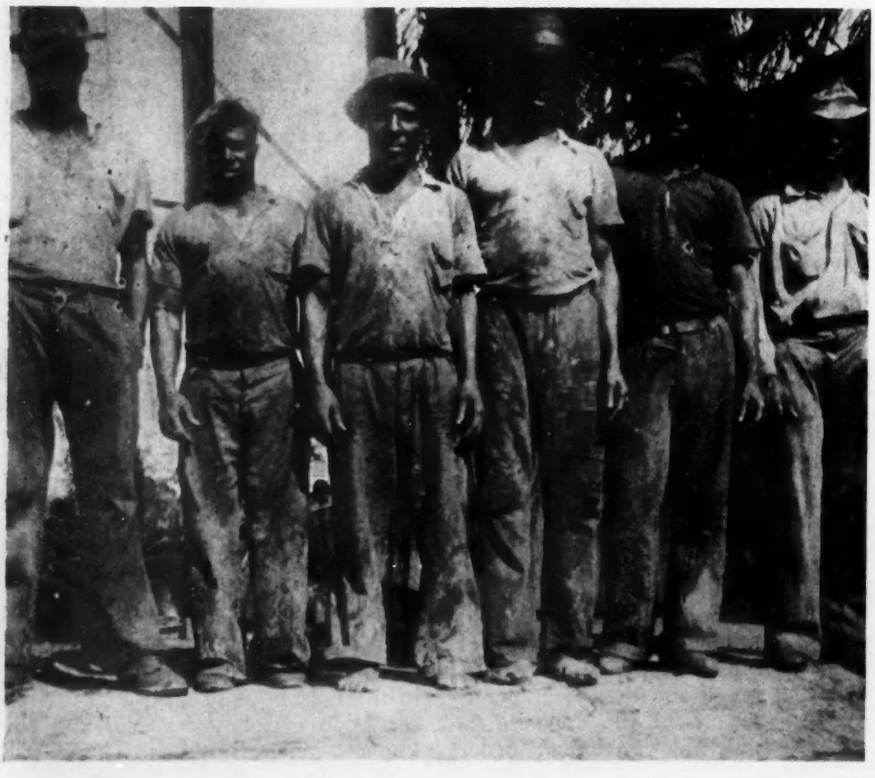
In general, along with other advances, the production equipment found in Trinidad fields will be as per the latest proven devices of U. S. manufacture.

Conclusion

All in all it can be said that the zealousness of Trinidad operators to achieve and maintain the peak of efficiency at all times in drilling and production equipment and practices dominates all considerations, economic and otherwise today.

Summarizing the foregoing, the considerable activity which is being displayed within the industry today on account of the intensive exploitation and exploration programs in operation must stand out above everything else. And in the wake of this we see an already achieved increase of some 13 percent on the production results of the first nine months of 1938 alone as compared with the same period of 1937. Then there is the trend toward deeper exploratory drilling, the contemplated immediate expansion of refining, tankage and loading facilities, a gradual increase in the number of rigs in operation, the desire for greater drilling speeds, and the application of more up to date drilling and production machinery all around, all this, moreover, being accomplished under the influence of improved operating technique along the lines indicated in the above. And for further evidence of this it must be remarked that although it has all been going on somewhat feebly in years past, Trinidad today (concurrent with the latest adoptions in the U. S. A.) lays considerable emphasis on daily discussions of questions relating to back pressure, bottom-hole pressure, pressure maintenance, reservoir energy, controlled water drive, water coning, reservoir equilibrium, gas/oil ratio, porosity and permeability factors, reservoir saturation and so on and so forth along with the rest of them.

Thus it can be seen that the average Trinidad operator means to extract from the ground the greatest possible amount of oil, in the shortest possible time, at the lowest possible cost, and above all, in the most efficient manner.



Native crews, such as this one, under the supervision of an imported driller, are drilling to 9000 feet in Trinidad.

New!

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announces an addition to
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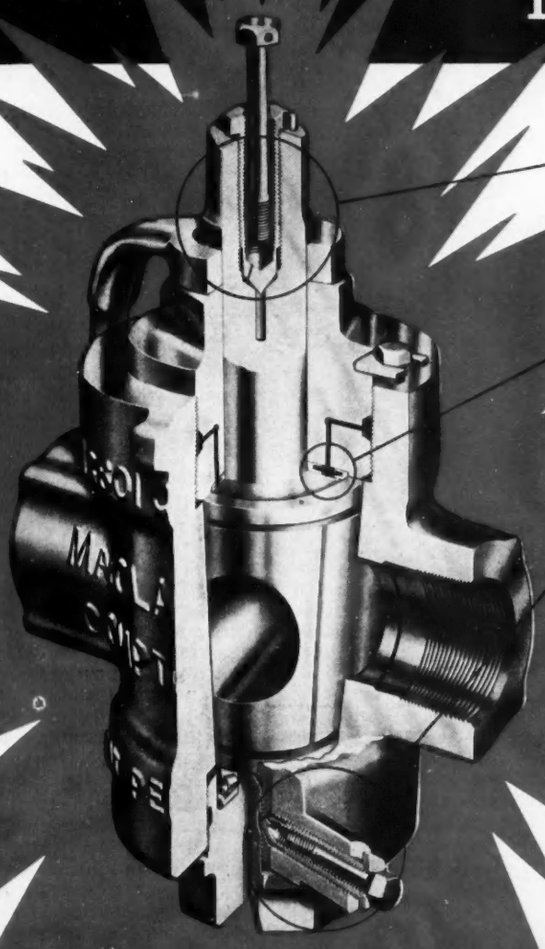
HYDRO-SEAL PLUG VALVES



LUBRI-CHECK

A sure mechanical means of sealing off the grease chamber while lubricating screw is removed and new grease inserted, **when valve is under pressure.** Simple in operation. No balls or springs.

PACKING RINGS

A prepared packing mixture is forced into the packing ducts thus expanding the packing ring lips and at the same time sealing the threads between the nut and the body against leakage. Packing mixture will stand 700 deg. F. heat and solidifies in duct as steadfast barrier against leakage of fluids and gases.

PACKING FROM THE OUTSIDE

A turn of the packing bolt forces packing mixture to all necessary parts **while valve is in use;** and any leakage can be stopped instantly by a turn of packing chamber bolt. No rubber, leather or metal sealing **means** to wear out or be replaced—hence no shut-downs to replace **packing!**

SAVINGS

No other plug valve on the market today offers you the many advantages which are expressly designed by MacClatchie for low operating costs!

MacClatchie pioneers again!

It's packed from the outside; it's equipped with the new MacClatchie "Lubri-Check" to give air-tight sealage; it comes in round **full** opening or **conventional type** opening through plug; it has **heavy** Roller Bearings; it is steel or Meehanite throughout body and plug; and it features many other advantages **never before** available at such **low prices.**

The valve was invented to cut maintenance costs to an absolute minimum, and to abolish unnecessary shut-downs for the replacement of parts. Test runs have proven its money saving value, and MacClatchie is ready to pass on this great saving to you!

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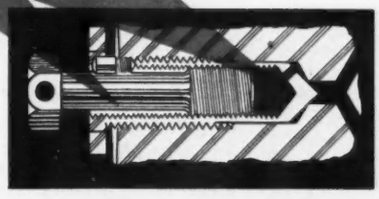
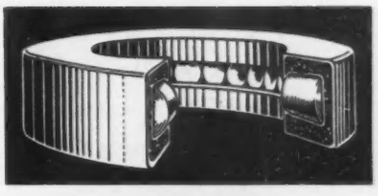
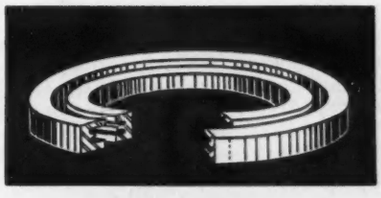
200, 500, 1000, 2000, 3000 W. P.
Screwed or Flanged Ends



ADVANCED "LUBRI-CHECK"
To operate: (1) Turn "Lubri-Check" left to pin (seated position) (2) Remove lube screw. Insert grease stick. Replace lube screw. (3) turn "Lubri-Check" right to pin (operating position). (4) Turn screw right to force grease into valve.



ROLLER BEARINGS
MacClatchie Hydro Seal plug valves are equipped with double-duty **heavy** roller bearings for **EASY** turning.



PACKING RINGS
Outer and inner grooved rings are placed above plug body facing each other. When packing is forced from outside through packing chamber to ducts, ring lips expand holding packing solidly in position and forming a leak-proof barrier.

PACKING CHAMBER
Packing chambers, both upper and lower, are equipped with "Lubri-Check" units. Packing bolt can be removed and replaced **while valve is in use** to refill with packing mixture.

MacCLATCHIE
MANUFACTURING COMPANY
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WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Mexican Situation

Since expropriation exports have declined 50 percent . . . Bulk of shipments have been to Germany and other nations located in Europe.

Mexican exports lower since expropriations

Bulk of Mexican petroleum exports, since the expropriation of foreign-owned companies last March, has moved to European destinations, principally Germany, Belgium, Holland, Norway and Sweden.

The aggregate value of Mexican petroleum exports since expropriations to October 1 has reached a total of $6,261,426, representing an average monthly value during the 6½ months of about $1,000,000. Exports when the oil companies were operating Mexican properties were at the rate of about $2,000,000 monthly.

The total cash received by the government is slightly under $4,000,000 however; for from the aggregate of $6,261,426 is to be deducted 60% of the value of purchases made by Davis & Company, that amount having been paid for in material and credits.

Davis Biggest Buyer

The big buyer of Mexican oil has been Davis & Company, Inc., of New York. This company alone has taken nearly 62% of the aggregate value of all export sales during the 6½ months from March 18, date of expropriation, to October 1. Payment has been on a basis of 40% cash and 60% in material.

But the deal between Davis and the government is coming to an end, according to recent announcement, by mutual consent. Davis now is reportedly liquidating a $500,000 lot of oil pipe, which the Mexican Petroleum Administration needed and agreed to pay for in oil. Davis is understood to have shipped nearly 30 million pounds of German-manufactured pipe into Houston, Texas, during 1938, and presumably much of this was consigned to Davis in a barter exchange for crude oil delivered to Germany.

New Buyer Appears

With the approaching demise of the Davis agreement, however, a new, and apparently formidable, taker of Mexican petroleum has come forward in Eastern States Petroleum Company, with offices and refinery at Houston. This concern is said to have agreements for the sale of gasoline in France, gasoline and gas oil in England and fuel oil in Italy.

Eastern States, through October 4, had taken nearly 600,000 barrels of petroleum, all shipped to Houston.

Davis & Company and Eastern States Petroleum Company represent the only two buyers who have actually moved out Mexican petroleum in any major volume since the government took over the foreign-owned companies' properties. Sales to these companies have not produced full payment in cash. As mentioned, the Davis agreement called for payment of only 40% in cash. The contract with Eastern States, signed August 1 for 7,300,000 barrels to be delivered over a period of two years, provides that Eastern States will not have to pay for the time being for the first $1,000,000 worth of oil. About half this much crude has been moved to Houston so far.

The sales to Davis & Company totaled $3,841,827, of which $2,305,097 (or 60%) was to be liquidated with material. Much of the material credit of Mexico has been piled up in Germany. Some sources recently placed Mexico's barter credit balance in that country at $800,000 still.

Long litigation in Mexico is foreseen

Final judicial settlement of the oil question will not be forthcoming for several months, it is estimated, because of the federal supreme court's rejection of the companies' appeal from expropriation. The court threw out the appeal on the ground that the action was premature, that the companies had not submitted their case through administrative channels.

The court disagreed with the companies' contention that presenting the appeal to it was done because they had exhausted all administrative measures to have the expropriation decree set aside. The court indicated that the companies still have administrative avenues for their case.

There is less optimism that the companies will ever get back their properties. The companies have not yet decided what other administrative or judicial step they will take with regard to the expropriation measure. Nevertheless, the major companies involved in the expropriation are continuing several key and executive employees on here and in other parts of Mexico at full wages, pay that obtained before the oil business fell into government hands.

U. S. Interests Protest

Indication that Texas oil interests may balk at the continued importation of Mexican crude has been reflected in recent dispatches. Texas interests have requested an investigation by Federal authorities of the importation of Mexico crude at a price below that listed in the country of origin (Eastern States is said to be getting the product at 70 cents a barrel). In case trade regulations are being violated by such alleged "dumping," tariff adjustments are being asked.

This situation, together with recent statement of Chairman Ernest O. Thompson, Texas Railroad Commission, that Texas will not stand idly by and allow other states and countries to take its rightful oil markets, has brought about considerable speculation in oil circles in Mexico City over what the future may hold in relation to the movement of Mexican crude into Texas ports.

Hope to Sell to Germany

Hope of more sales to Germany of oil and by-products, but on an all-cash basis, are entertained by Petroleos Mexicanos as a result of the settling down of the European situation and Germany's industrial expansion. It is understood that Mexico will demand more cash in future oil deals with Germany as this country is fast becoming saturated with German machinery, etc. obtained in exchange for oil.

There is expectation that Greece may become an important buyer of Mexican oil and by-products as an Athens syndicate is reported to be arranging to open negotiations with the government. The deal is expected to be consummated this fall.

Export Status

Total exports for the 6½ months ending October 1 were as follows: crude 2,396,922 barrels; fuel oil 327,939 barrels; gasoline 990,604 barrels; gas oil 1,535,945 barrels; asphalt 22,987 metric tons; gas oil for ships bunkers

52,056 barrels; fuel oil for ships bunkers 173,766 barrels; asphaltic residue 140,612 barrels; kerosene 14,689 barrels and small amounts of miscellaneous products such as spindle oil, road oil, naphthenic acid and lube oil.

Crude Oil Shipments

All the crude was taken by five consignees as follows: Davis & Company 1,399,049 barrels; Eastern States 446,509 barrels; Thomas and Harrison, Ltd., of London, 257,892 barrels; Belgian Petroleum Refinery 42,653 barrels. The remaining 250,819 barrels was oil reportedly exported for the account of R. B. Cochrane of Tampico, associated with R. G. Pieper of San Antonio and C. F. MacCauley of Tampico, independents. This Cochrane oil was delivered in four shipments, one consignment of 63,627 barrels being loaded in May with Flushing, Holland, as destination. The remaining 187,192 barrels were shipped to Philadelphia.

Thomas and Harrison, Ltd., it will be recalled, launched negotiations for extensive purchases of Mexican crude shortly after the expropriation, but took only three cargoes, the first on April 20, the next June 1 and the latest July 18, all going to Belgium. The company still maintains a Mexico City office.

The Belgian Petroleum Refinery is a recent entry in the ranks of bidders for Mexican crude. Its only cargo so far put to sea September 15 bound for Antwerp.

All of Eastern States takings have gone to Houston.

Announced destinations of the crude delivered to Davis & Company, with totals of shipments, were as follows: Land's End (that granite promontory forming the extreme westerly point of England) 577,909 barrels, Hamburg 417,317 barrels, Belgium 127,349 barrels, Yokohama 84,447 barrels, Sweden 65,327 barrels, Teneriffe 86,245 barrels, Trieste 40,455 barrels.

The total of crude exports by all interests for the period in question (2,396,922 barrels) represented aggregate value of $2,114,305 on the basis of selling price. This gives an average price of a little more than 88 cents a barrel.

The lowest price was 65 cents for a cargo of 58,283 barrels of Panuco crude delivered to Davis & Company May 17 for Hamburg. The highest price was 97 cents. Numerous shipments went at the latter figure, including the first export cargo after expropriation of 84,447 barrels of Poza Rica crude forwarded through Davis & Company March 31 for Yokohama.

The price of 70 cents at which the Eastern States is getting crude is the lowest for heavy shipments. The Eastern States' contract calls for delivery of 10,000 barrels a day for two years, or a total of 7,300,000 barrels.

Of the total of crude exports for the 6½ months, 1,502,175 barrels came from Poza Rica, 807,853 barrels from Panuco and 86,894 barrels came from the Southern field. Davis took all the Southern crude, 873,642 barrels of Poza Rica and 438,513 barrels of Panuco oil. All of Eastern States takings have been Poza Rica oil, a total of 446,509 barrels. Thomas and Harrison took 182,024 barrels of Poza Rica and 75,868 barrels of Panuco oil. The Cochrane exports were all Panuco crude. Recent cargo for the Belgian Petroleum Refinery was Panuco oil.

Export Destinations

Survey of announced destinations of shipments, shows that the crude exports (2,396,922 barrels) were routed as follows: To the United States 633,701 barrels, 187,192 barrels being Cochrane oil for Philadelphia, the rest Eastern States oil for Houston.

To Belgium 427,894 barrels, 257,892 barrels being consigned to Thomas and Harrison, Ltd., 42,653 barrels to Belgium Petroleum Refining and 127,349 barrels to Davis & Company.

To Holland, 63,627 barrels, Cochrane oil.

To Hamburg, 417,317 barrels, Davis & Company.

To Yokohama, 84,447 barrels, Davis & Company.

To Teneriffe, 86,245 barrels, Davis & Company.

To Sweden, 65,327 barrels, Davis & Company.

To Trieste, 40,455 barrels, Davis & Company.

To Land's End, 577,909 barrels, Davis & Company.

It has been pointed out that crude and other shipments that left Mexican ports with Land's End as destination could have been diverted at sea for either German or Scandinavian ports. It has also been pointed out that some of the oil shipped to Belgium may have been destined eventually for Germany following processing at Antwerp or other Belgian point. Altogether shipments of crude that left Mexico for Hamburg, Land's End and Belgium totaled 1,423,120 barrels.

An analysis of export destinations shows that during the 6½ months cargoes for Germany included: Crude oil 417,317 barrels, gasoline 132,148 barrels, gas oil 975,249 barrels, fuel oil 48,970 barrels, asphaltic residue 59,262 barrels, kerosene 6867 barrels, asphalt 2734 metric tons.

To Land's End: Crude 577,909 barrels, gasoline 412,615 barrels, gas oil 339,895 barrels, fuel oil 135,219 barrels, kerosene 7822 barrels.

To Belgium: Crude 427,894 barrels, gas oil 69,710 barrels.

To Norway and Sweden: Crude 65,325 barrels, gasoline 21,167 barrels, asphalt 4382 metric tons.

The total of the Davis takings for the period is given as follows: Crude oil 1,399,049 barrels of the total of 2,396,922 barrels exported, gasoline 990,604 barrels, all that was exported; gas oil 808,852 of the total of 1,535,945 barrels exported, fuel oil 184,189 barrels of the total exports of 327,939 barrels, asphaltic residue 140,612 barrels, all that was exported, of which 81,350 barrels went to Trieste; kerosene 14,689 barrels, all that was exported. In addition there were other miscellaneous takings of minor nature.

The Hamburg Mineralol interests took 594,619 barrels of gas oil and Alfred Scherloh 132,474 barrels for Germany.

Of the fuel oil exports, the Alcohol and Cement Company took 68,000 barrels for Montevideo and Mitsyi and Company 75,750 barrels for Yokohama.

Total export sales of crude, fuel oil and fuel oil for ships bunkers amounted to 2,898,627 barrels. For 6½ months this shows an average of what are commonly considered crude sales of nearly 446,000 barrels a month. In 1937, under the foreign owned companies, crude and fuel oil export sales totaled 13,148,927 barrels, or an average of about 1,096,000 a month.

The Stendrup Company of Houston took the heavy volume of asphalt exports, a total of 20,639 metric tons out of the aggregate of 22,987 tons, valued at $210,800, exported. The price ranged from $8 to $10 a ton. The remaining 2348 tons were divided in small takings among several other interests.

Asphalt shipments were as follows: To Australia 6035 tons, France 3450 tons, Belgium 3225 tons, Germany 2734 tons, Norway 2431 tons, Sweden 1950 tons, with the remainder going to England, Ireland, Italy, Czechoslovakia and Switzerland.

Of Davis' gasoline takings, 295,595 barrels went to the United States. Shipments to Houston totaled 151,091 barrels, of which 71,996 were in bond. The rest went to New Orleans. Davis also routed 151,091 barrels of gas oil to the United States, 27,998 barrels in bond to Houston and 123,093 barrels to New Orleans.

Oil and gas companies in trouble in Mexico

An injunction has been asked of a local federal court by Sinclair Oil Company against the demand of the ministry of finance that it pay 500,000 pesos ($100,000) in accord with the law that provides a 4 percent impost on all money sent out of Mexico. The company argues that as all its goods were expropriated it has no funds to pay this tax. The ministry's contention is that although the company was expropriated it is responsible for this tax.

Gas Project Blocked

Hard luck seems to dog companies that try to extract and market natural gas from pools in dry Lake Texcoco, a few miles from here. An American firm, backed by Texans, that began this work was suppressed by the federal government because, so the ministry said, it failed to comply with certain provisions of its concession. The workers' cooperative society that took over this firm's business and called itself Sociedad Cooperativa Productora de Gas, S.C.L., has been doused by the ministry, on the ground that it lacked funds to advance the work on the scale it had promised and that it conducted an unauthorized stock-selling drive.

Injunction Refused

The ministry of national economy acted justly and within its rights in cancelling the concession obtained May 3, 1934 by Cia. Campos Petroleos de la Baja California, S.A. and in confiscating the 20,000-peso deposit the company posted, the federal supreme court ruled in refusing the oil firm an injunction against the ministry's actions. The court ascertained that the franchise was cancelled because the company failed to meet its provisions.

Rights to operate the railroad between Cerro Azul and San Jeronimo, Vera Cruz, that was privately used by some of the expropriated oil companies, have been given Petroleos Mexi-

canos by the ministry of communications and public works as a means of assuring continued transportation over this route of eight kilometers. The railroad is being run as a public service.

Right of way and rolling stock are to be improved.

Property Rights Cancelled

Ten acres of oil lands of Lot 135 of the Chinampa district, Vera Cruz, have been incorporated in the national petroleum reserves with cancellation of rights to the property of Cia. Petrolera Capuchinas, S.A. by the ministry of national economy.

Campaigns against tuberculosis and malaria have been launched in the Vera Cruz oil fields by the health department. Sanitation offices for this work have been established at Poza Rica and Cerro Azul.

Mexican ingenuity is called upon to produce an oil stove designed for economy, elimination of charcoal as universal household fuel and to stimulate oil consumption, by Distribuidora de Petroleos Mexicanos, the official oil marketing company, which has started a competition with cash prizes. The company plans to market 1,000,000 of the model stoves the contest is expected to yield.

France upholds Shell in seizure of Mexican cargo

It was indicated last week the Mexican government may have considerable difficulty henceforth in marketing crude oil, as a local civil tribune at Le Havre, France, ruled that Mexican Eagle Company (Royal Dutch-Shell) was justified in seizing a shipment of petroleum produced from the company's expropriated properties and shipped from Mexico to France by the Mexican government.

"No one in France," said the court, "may be constrained to cede his property, except in the case of a public utility, and just indemnity must be paid in advance."

Governor Marland spends week in Mexico City

The outstanding visitor of the past week in oil circle's interest of the Mexican capital was Governor E. W. Marland, of Oklahoma, at one time head of the $60,000,000 Marland Oil Corporation, whose vacation-bent (so he described it) jaunt to Mexico was preceded by press reports that his presence south of the Rio Grande might have a material bearing on the future of the Mexican petroleum situation. Governor Marland spent a week in Mexico. He arrived October 9 and left October 17. While here he conferred for two hours with President Lazaro Cardenas at the president's offices in the National Palace, was tendered an informal luncheon by General Jose Siurob, chief of the Federal District, was a guest at a dinner tendered by U. S. Ambassador and Mrs. Josephus Daniels at the Embassy residence, was honor guest at a sports carnival staged in the great stadium in Mexico City through the courtesy of the chief of police, and otherwise was entertained, feted and made the recipient of official courtesies.

Although Governor Marland persisted in terming his trip strictly a vacation one and in refusing interviews, he did express himself as believing Mexico's oil question could be worked out between the Mexican government and the oil companies "without any interference."

He continued: "I firmly believe that the common welfare of our nation and probably the safety of our nation depend on keeping good neighborly relations with Mexico and Venezuela and the continued flow of oil from Mexico and Venezuela. Of course, that must be limited for the time being—for three or four years—so as to protect the small wells in the United States. We have 350,000 small wells in the United States. We cannot have a lot of cheap oil from Mexico and Venezuela to prevent the pumping of those 350,000 wells.

"Our conservation program calls for a reserve of 13,500,000,000 (billions) barrels. Ten billions of this reserve must come from the United States. Our welfare naturally depends on a supply of oil. We can't be sure of that in the United States for many years."

Concerning the re-sale of Mexican oil to Germany, he said: "It's an unfortunate but natural consequence of events.

"This situation of Mexican selling is not nearly so damaging as that of our California companies selling to Japan. Tankage has been taken down in Oklahoma and sent to Japan and I don't like it."

He ended with the reiteration that "we must reinforce our reserves."

Union asks railroad to use Mexican oil

Important domestic outlet for the governments oil is seen by the National Railroaders Union in its petition to the Southern Pacific Railroad that it consume Mexican instead of American oil. Union estimates that if Southern Pacific switches to home oil, railroads economic condition which now threatens bankruptcy will be improved by bettering Mexican conditions as such a large use of oil will be widely beneficial.

Japanese oil company seeks government aid

The North Saghalien Oil Company is reported unofficially at Tokio to be anxious to receive formal protection of the Japanese government. Officials are said to be considering petitioning the authorities to reorganize the firm as a semi-governmental company.

For several years the North Saghalien Oil Company has been suffering as a result of tension between Japan and the U.S.S.R. Repeated reports have stated that employees were put in jail without reason, that the firm was being taxed out of existence, that it was no longer allowed to prospect for or transport oil.

As a result of those difficulties, the concern has made a claim against the U.S.S.R. amounting to Yen 15,000,000, which the company officials hope that the government will undertake to collect. These factors, it was pointed out, make it desirable that the government should recognize the firm, making it a semi-governmental company, with its dividends guaranteed and with full protection against unfair action by the Soviets.

Alberta launches oil industry investigation

An investigation of all branches of Alberta's petroleum industry was launched last week following appointment of a two-man commission by E. C. Manning, provincial secretary and minister of trade and industry. The commission is empowered to study production, refining, distribution and consumer costs, and summon witnesses and records preparatory to making recommendations on fair and equitable prices for crude and petroleum products.

Justice A. A. McGillivray, of Calgary, member of the appellate division of the Supreme Court of Alberta, was named commission chairman, and L. R. Lipsett, of Ardley, attorney and authority on fuel marketing problems, is the second member. J. J. Frawley, solicitor to the attorney-general's department, was named commission counsel, while F. G. Cottle, member of the Alberta Gas & Oil Conservation Board, will serve the commission as accountant and advisor.

The inquiry follows passage of a resolution at the last session of the Alberta legislature urging the government to consider an investigation into the industry. Manning declared the inquiry was deemed necessary because of the importance of the oil resources of the province.

Court attack on Alberta conservation law fails

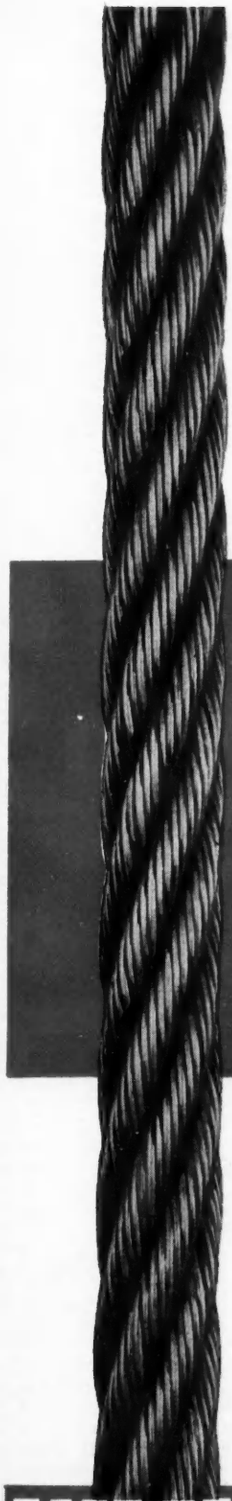
The first court attack upon Alberta's new Petroleum and Natural Gas Conservation Board was unsuccessful when Justice W. C. Ives at Calgary October 15 dismissed proceedings brought against the board by Mercury Oils, Ltd.

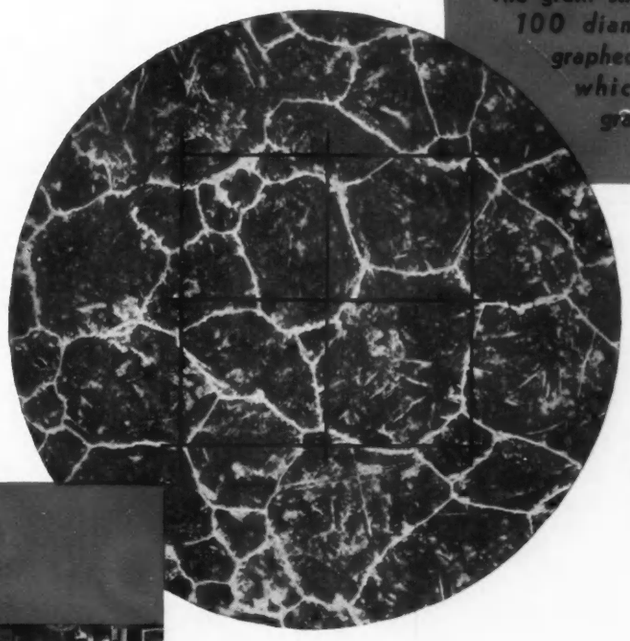
The company, through a certiorari proceeding brought in Alberta Supreme Court, sought to nullify a conservation board order restricting the flow of some 100 naphtha gas wells in Turner Valley to the available gas market demand of 40,000,000 cubic feet a day. The order, which became effective the day the court action was dismissed, is the first conservation move undertaken in the West Canadian province in many years and is intended to conserve gas pressure needed to lift crude to the surface in some 50 wells on the west flank of the field. Gas wells, at the time the order became effective, were producing 114,000,000 cubic feet of gas a day and were capable of producing 300,000,000 cubic feet a day.

As a result of the decision, the Mercury company has three courses open in continuing its attack on the conservation measure: It may appeal the decision of Justice Ives; it may continue a pending civil action against the board and the attorney-general to have the Gas Conservation Act declared unconstitutional, thereby having the board declared an illegal body, or it may continue to operate its gas wells in defiance of the board's order to make a test case if the board attempts prosecution in police court.

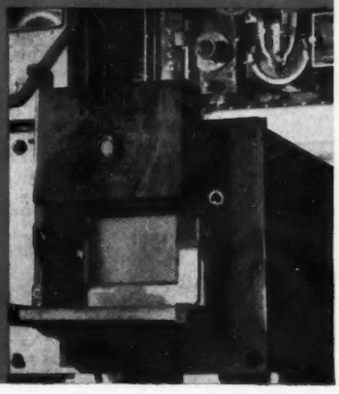
The act establishes an initial penalty of $2,000 for non-compliance of board orders, with additional penalties of $500 for each day of non-compliance.

Counsel for the company announced the judgment would be appealed and that the company would continue its





The grain structure, magnified 100 diameters, is photographed through a screen which measures the grain size accurately.



The preparation of a sample for grain size measurement requires heating to a high temperature for several hours. Automatic electric control is used by Wickwire Spencer to assure accuracy of the test.

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BUILDING LIFE INTO WICKWIRE ROPE BEYOND SPECIFICATIONS

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civil action which was instituted in conjunction with Miracle Oils, Ltd., and Gas & Oil Products, Ltd., owner of a gas absorption plant in the Turner Valley field.

Production in Peru is down this year

The two leading producing companies operating in Peru had considerably less production in August, 1938, than in August, 1937.

International Petroleum Company, Ltd., produced 1,111,339 barrels as compared with 1,246,306, and Compania Petrolera "Lobitos" produced 218,595 barrels, as against 245,275.

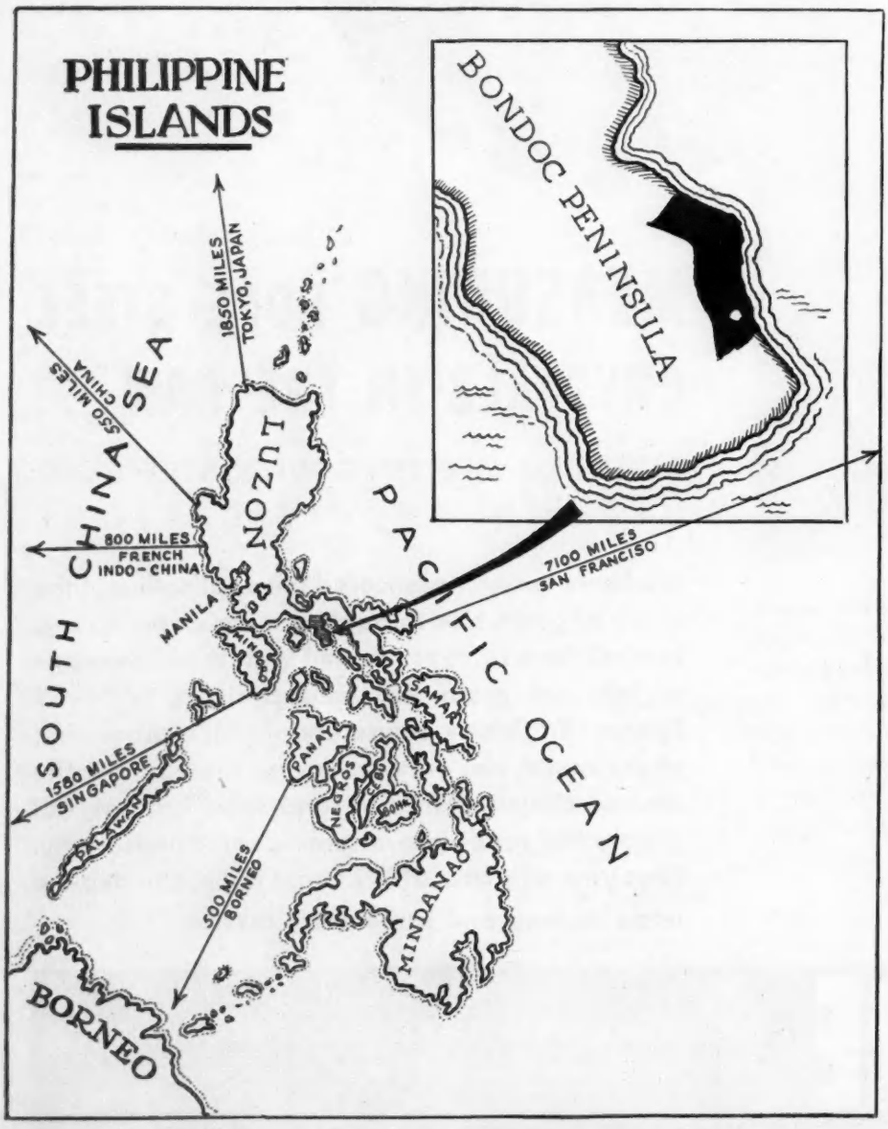
For the first 8 months of 1938, the former company produced 8,753,901 barrels, as compared with 9,867,180 in the similar period of 1937; but the latter company's output was 1,800,483 barrels, or more than the 1,704,243 barrels produced in the first 8 months last year.

The runs to stills by the largest refinery in Peru during August, 1938, amounted to 571,648 barrels, compared with 543,564 in that month last year. Output of gasoline and fuel oil was smaller than in August last year, but output of kerosene, gas oil, lubricating oil, asphalt, coke, and still gas was larger.

Italian crude output is lower

Italy's production of crude oil in the first 7 months of 1938 totaled 7909 tons, compared with 8789 tons in the similar period of 1937.

The output in July, 1938, was 1164 tons, compared with 1171 tons in July, 1937.



The completion two weeks ago of a well good for 200 barrels at 568 feet has placed a new valuation on the Philippine Islands. The well, owned by Far East Development Company, is located on the Bondoc Peninsula, Tabayas Province. While Tokyo, Japan, is but 1850 miles from the new discovery, the United States is nearly 7100 miles via Hawaii. The small shaded portion on the large map shows Bondoc Peninsula, where Far East Development Company has blocked out 75,000 acres. The enlarged portion of Bondoc Peninsula appearing in the square at the top of the district map shows the territory under lease, with the white dot being the approximate location of the producing well. Additional details of this strike appeared in The OIL WEEKLY, October 17, 1938.

California Standard completes 1500-barrel well in Arabia

An official report from the Standard Oil Company of California, discloses that its subsidiary, California Arabian Standard Oil Company, operating in the Damman field, Saudi Arabia, has brought in Damman 2 for 1500 barrels of 35-gravity oil per day from 4700 feet. Damman 4 is slated for completion soon. The company started drilling in 1935 and put down 10 wells in an area extending from the eastern side of Saudi Arabia. Prior to obtaining the concession in 1933, the land developed was comparatively unknown geographically and no systematic geological surveys had been made.

Start work on 100-mile 16-inch line in Venezuela

Venezuelan Gulf Oil Company has started clearing right-of-way and building road for 100 miles of 16-inch line to run from Puerto de la Cruz on the Caribbean shore of Venezuela to a new terminal called San Tome', near Oficina field in the district of Freites in Anzoategui, where Mene Grande Oil Company, a Gulf subsidiary, has developed some 28.6 gravity oil and has 6 steam rotaries busy.

Orders for pipe for the above project will be placed with the mills about January 1, it is said.

Czech production of oil and gas larger

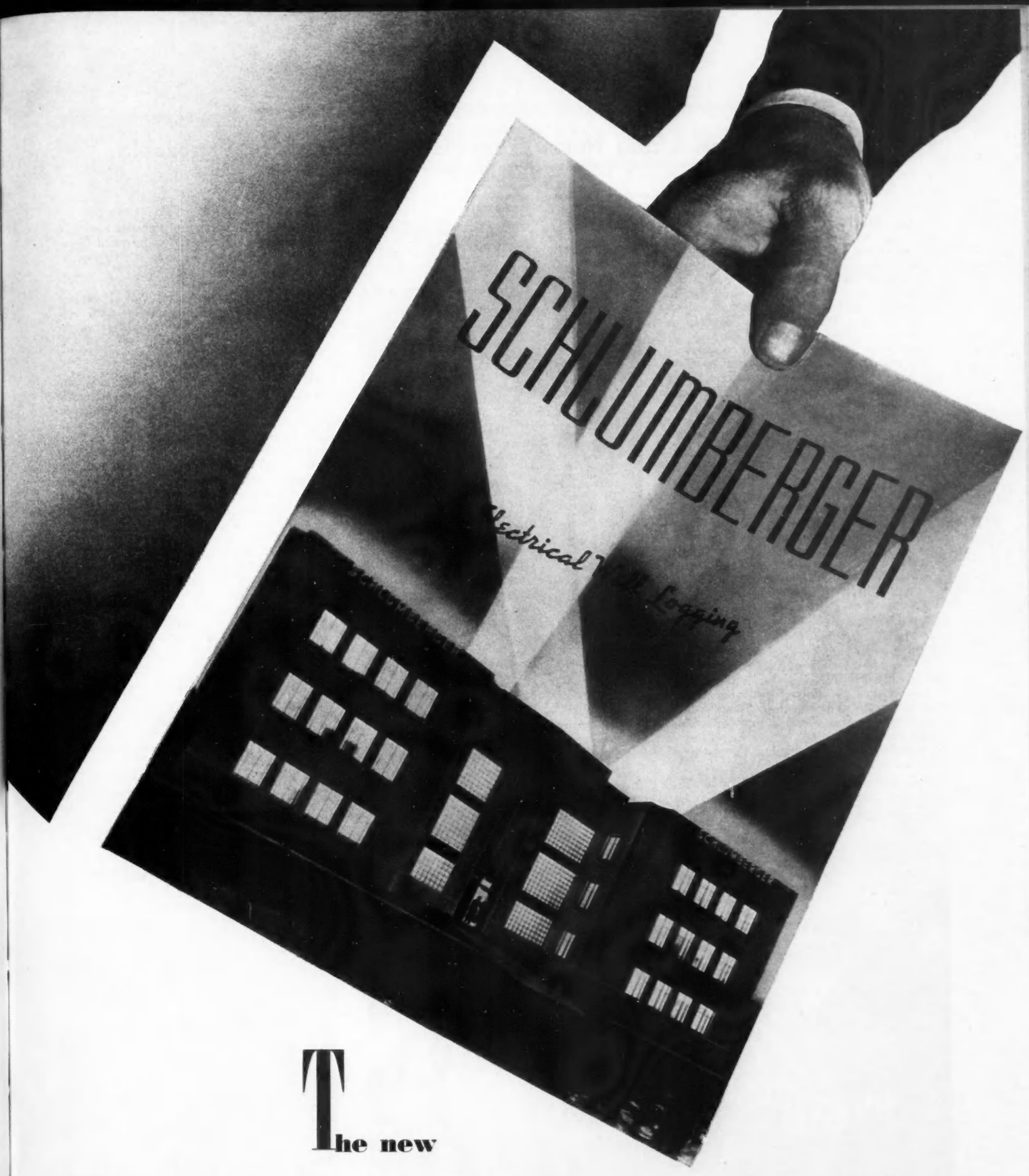
Czechoslovak production of crude petroleum in August, 1938, amounted to 1609 metric tons, or an increase of 5.8 percent as compared with 1524 metric tons in July, 1938, and of 8.8 percent as against 1479 metric tons in August of the preceding year.

Production of natural gas in August of the current year totaled 139,465 cubic meters, representing a gain of 7.9 percent over 129,234 cubic meters in July, 1938, and of 14.5 percent over 121,800 cubic meters in August, 1937.

Cumulative figures for the period from January through August, 1938, show an increase of 10.1 percent in petroleum production as against the same period of the previous year, the total output of crude petroleum amounting to 12,701 metric tons and 11,537 metric tons, respectively, during the first eight months of 1938 and 1937. Output of natural gas rose by 17.4 percent from 933,706 cubic meters from January through August, 1937, to 1,096,325 cubic meters in the corresponding period of the current year.

Alberta crude production 799,023 barrels in month

Crude oil production in Alberta, Canada, in August, 1938, totaled 799,023 barrels, and consisted of the following quantities, by fields: Turner Valley, limestone, 793,872 barrels of water-free oil; Turner Valley, shallow crude, 758 barrels; Red Coulee, light crude, 1168 barrels; Wainwright, heavy crude, 1130 barrels; miscellaneous oils, 2095 barrels.



The new Schlumberger "Electrical Well Logging" catalog, No. 809, is ready. A copy will gladly be sent to interested persons on request. Schlumberger Well Surveying Corporation, Houston, Texas.

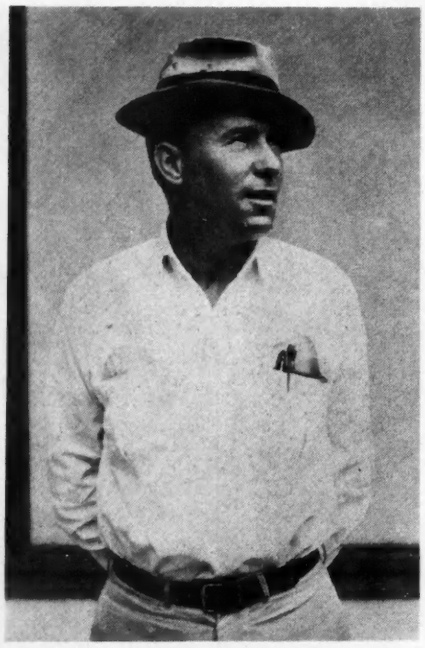
Personal Glimpses and Notes From Here and There in Venezuela

By WM. V. GROSS, Foreign Editor The Oil Weekly

W. C. SHUTTS, formerly with Humble Oil & Refining Company's petroleum engineering department in Houston, was just getting his back yard there fixed up to accommodate a couple of saddle horses for him and Mrs. Shutts when he accepted his present job as chief petroleum engineer for the Eastern Venezuela division of Standard Oil Company of Venezuela. Now he is itching to warm up the old double barrel on some of those prairie chickens and ducks around Pedernales. Shutts, incidentally, had a very unfortunate break late in September when the schedule of Spanish classes changed in his case to night classes, causing him to have to go without a couple of evening tennis games each week.

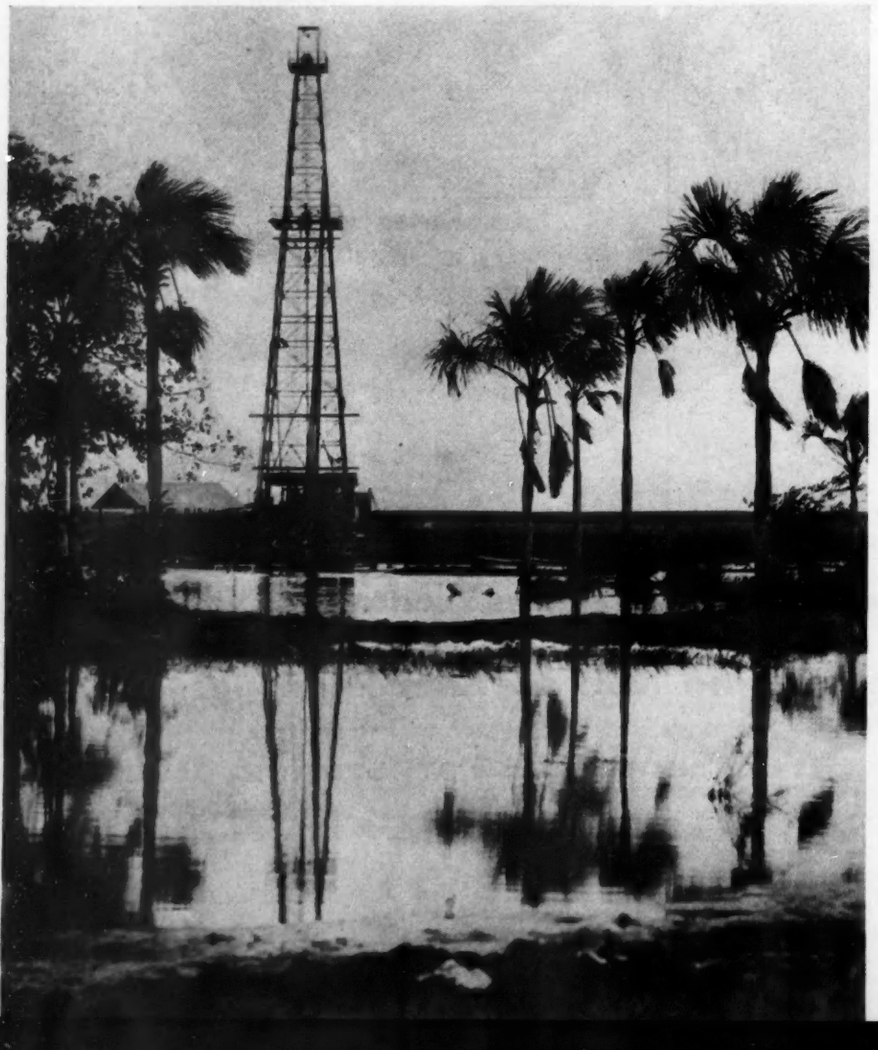
BILL PLUNKETT, American driller who has seen foreign service with Nederlandsch Kolonial Petroleum Maatschappij in Sumatra, and who lately has been drilling in Temblador field of Eastern Venezuela, recently returned to Caripito from a vacation in the United States. William brought back a pair of fancy stitched cowboy boots which he vows will wow the natives of Savannah. His back trail runs through India and Argentina, too.

PAUL PLUNKETT, formerly of Shreveport, Louisiana, having convalesced several months in the United States from a skull concussion, late in September was dispatched to Jusepin, where he will serve as driller for Standard Oil Company of Venezuela.



J. S. BAILEY

J. S. BAILEY, production foreman for Standard Oil Company of Venezuela at Quiriquire, is reported clamoring for a transfer to either Temblador or Pedernales, where the hunting and fishing are said to be better.



LELAND WYNN, tool pusher in the Cumarebo district for Standard Oil Company of Venezuela, was a visitor in Caripito recently.

D. C. BOWLES, recently with Huasteca Petroleum Company in Cerro Azul and Ebano in Mexico, arrived last week in Caripito to go to work for Standard Oil Company of Venezuela.

JOHN B. GREEN, general utility man for both drilling and production departments of Standard Oil Company of Venezuela whose 15 years in South America have not dimmed a marked Oxford accent, recently returned to Caripito from vacation to be assigned a post with the San Joaquin wildcat operations of the company. John told a good story on a couple of fellow Englishmen who were with the Standard in Argentina when John was several years ago. It seems they were put in charge of the remuda of pack mules when material was being moved into the northern part of the country, near the Bolivian border. One of the mules disappeared and a search for it extending over two months proved futile. So the brand on the mule's neck was recorded in the company books among the animals that died on the trail. Two years later the mule showed up in one of the company's corrals, and the Englishmen, recognizing the neck brand, were aghast at the prospects of going back and revising two years of bookkeeping to account for it. So to keep the books straight, they forthwith shot the mule.

When John finished his story, H. A. (Shorty) Beck, district superintendent at Cumarebo piped up with: "John, why do you Britishers always talk in the third person? I'll bet it was you who shot the mule."

GENERAL RAFAEL ESPINOSA PEREZ, although not employed by any oil company, is probably better known among Eastern Venezuela oil men than any man. It is the general's duty, as collector of customs, to sock those who should be socked in the matter of import taxes and yet to do it in such a manner as to leave the sockee with the impression that the receipt for his fine or duty tax is a possession of which he should be as proud as a D.S.O. or a Croix d'Guerre. The affable general, mellowed now by 76 summers, is an habitue of the Caripito club, a recreational establishment maintained by Standard Oil Company of Venezuela for employes and guests. He looks back upon the days when he fought for President Gomez and beyond them to his early life as a rancher, sighs over his drink and says, "Ah, cattle raising is the finest business in the world. Maybe some day I shall be back in it. Quien sabe?" Everyone likes el general, especially the oil men he has kept out of the carcel by explaining the intricacies of the thou-shalt-nots of the customs department.

A five-mile stepout from Temblador field, Sotillo district, State of Monagas, Standard Oil Company of Venezuela's Hato 13 opened considerable more ground in the erratic spotted area of exploitation.

MEN IN THE INDUSTRY'S NEWS

J. W. HOUSE NAMED WEST TEXAS-NEW MEXICO SUPERINTENDENT FOR HUMBLE AS W. T. DOHERTY RESIGNS

W. C. ANDERSON AND J. P. RUCKMAN ALSO ARE PROMOTED

EFFECTIVE October 16, W. T. (Doc) Doherty resigned as division superintendent of Humble Oil & Refining Company in charge of the West Texas-New Mexico Division, and has been succeeded by J. W. House.

Doherty, who first entered the employ of Humble Oil & Refining Company at Baytown, Texas, on July 12, 1922, will enter the oil business as an independent operator. During his 16 years with the company, he served approximately four years at Baytown, one year in the marketing department at Houston, and nine years in the petroleum engineering department, of which department he had active charge for two years. He was transferred to the West Texas-New Mexico division on July 1, 1936 as division superintendent in charge of the production department's operations, in which capacity he served until the time of his resignation.

The new West Texas-New Mexico division superintendent, John W. House, has been stationed in the West Texas division for approximately 12 years, and prior to his present promotion was assistant division superintendent in the same area.

J. P. Ruckman, who has been district superintendent in charge of the Gladewater district, East Texas division, was promoted to assistant superintendent of the West Texas-New Mexico division.

W. C. Anderson, formerly asistant superintendent in the London district, East Texas division, succeeds Ruckman as district superintendent in charge of the Gladewater district.

W. T. DOHERTY

Blank-Stoller

JOHN W. HOUSE

J. EDGAR PEW, vice president of Sun Oil Company, Philadelphia, visited the company's Dallas district office the past week while on an inspection tour of holdings in the Southwest.

JERRY SADLER, who will become a member of the Texas Railroad Commission in January, is recuperating in a Markel, Texas, hospital following an emergency tonsillectomy. He was stricken while on a speaking tour of the state.

J. W. FITZGERALD, legal advisor for the East Texas Federal Tender Board, died October 18 at his Tyler, Texas, residence on his 76th birthday.

D. V. CARTER, chief petroleum engineer for Magnolia Petroleum Company, Dallas, and an ardent football fan, is vacationing in the Middlewest, with his itinerary timed so as to make several of the big games.

CLIFFORD E. SAVAGE, formerly scout at Denver for Carter Oil Company, has been made chief scout of the company's eastern division, with headquarters at Mattoon, Illinois. Before going to Denver, he was assistant chief scout for the company at Tulsa.

G. MOSES KNEBEL, executive with Standard Oil Company of Venezuela, left Caripito October 12 for a vacation in the United States. Knebel formerly was with Humble Oil & Refining Company in Houston.

W. S. ARTHURS, chief scout for Skelly Oil Company, Tulsa, returned from a vacation in southwest Arkansas.

O. G. TUTTLE, general sales manager for Cities Service Oil Company, Chicago, was a recent visitor in Tulsa.

C. H. REYER, JR., and Harry Miller, Stanolind Oil & Gas Company, Tulsa, are in New Mexico checking stock and equipment on a community development.

RALPH T. ZOOK, of Bradford, Pa., one of the leaders in Eastern waterflood activity and development is visiting in the Mid-Continent area around Tulsa and eastern Kansas.

C. C. McDERMOND of Maracaibo is in the States.

R. LANDRY, marine superintendent at Point-a-Pierre for Trinidad Leaseholds, Ltd., flew back from the United States recently, landing in Port of Spain October 10 and going immediately to headquarters.

DANIEL JONES and Harris Allen, geologists for Phillips Petroleum Company, were in Evansville, Indiana, last week.

G. L. PARRIS, associated with Robert E. Garrett, independent operator of Tulsa, is looking over Illinois, Indiana and Kentucky fields.

M. W. EDINGTON, Arkansas manager for Gulf Refining Company, last week announced his company's contribution of $4,000 to the Arkansas Centennial Commission for a state exhibit at the New York World's Fair.

D. B. McCALMONT, Franklin, president, heads directors of the Central Pennsylvania Oil Producers' Association elected at the organization's annual meeting last week. Other directors, who were named on the report of a nominating committee comprised of Elmer Roeder, Franklin, chairman; L. S. Neely, Knox, and J. M. Bailey, Pleasantville, are: Frank Bowers, J. E. McComb and Eugene Moyar, all of Rouseville; H. J. Crawford, Emlenton; J. M. Bloss, Roy Bailey, Dr. B. W. Bedford and Alex Warner, all of Titusville; Wilbur Scofield, J. M. Bailey and V. G. Monroe, all of Pleasantville; C. B. Hoffman, Harry H. Craig, J. B. Porter and Ralph Hettenbaugh, all of Clintonville; B. A. Porter, Harrisville; H. R. Panton, Foxburg; S. F. Amsler, St. Petersburg; L. S. Neely and F. G. Youkers, Knox; O. H. Culbertson and Frank Shreffler, Clarion; Isaac Hess, Van; Isa H. Dale, E. E. Grimm, James T. Foster, W. D. Doyle and W. O. Milton, all of Franklin; W. J. Brundred, H. D. Brown, R. B. Bossler, Dr. H. A. Downs, John H. Glass, Howard Smithman and S. Y. Ramage, III, all of Oil City.

CONTINENTAL OIL COMPANY ADVANCES J. C. JOHNSTON, H. B. HURLEY AND R. L. CARPENTER

JOHNSTON MOVES TO DENVER AND HURLEY TO FORT WORTH

PROMOTION of J. C. Johnston to be general superintendent of the Rocky Mountain division of the production department of Continental Oil Company, replacing R. S. Shannon, who has resigned, has been announced by J. G. Dyer, vice president in charge of production and drilling east of the Rocky Mountains.

At the same time, announcement also was made of the appointment of H. B. Hurley to be assistant general superintendent of the Texas-New Mexico division, replacing Johnston, and the advancement of R. L. Carpenter to be district superintendent, West Texas district, succeeding Hurley.

Johnston, a graduate of Michigan Agricultural College, was engaged in production work in the Tulsa oil fields until the outbreak of the war. Following military service, he joined Continental Oil Company in 1919 as district superintendent at Tulsa, and was later located at Shiprock, New Mexico, and at Borger, Texas. In 1936, he was appointed assistant general superintendent of the Texas-New Mexico division of Continental's production department, Fort Worth, Texas, the position he held at the time of his promotion. His new headquarters will be in Denver.

Hurley was born and educated in Pennsylvania, and was active in production work in that state before entering the navy at the time of the World War. During the years from 1919 to 1926 he was engaged in production work in the Oklahoma oil fields, joining Continental as lease foreman at Duncan on September 14, 1926. He was later made district superintendent of production activities around Seminole, and then in the West Texas fields. As assistant general superintendent of the Texas-New Mexico division he will be located in Fort Worth, Texas.

Also a Pennsylvanian, R. L. Carpenter joined the Continental staff as production foreman, Amarillo, Texas, July 17, 1926, and was active as lease foreman and later as district foreman in the West Texas territory until his appointment in 1931 as assistant district superintendent, Big Spring, Texas.

J. C. JOHNSTON

H. B. HURLEY

H. E. LINAM of Caracas, Venezuela, general manager of Standard Oil Company of Venezuela, is visiting the United States.

JIMMIE MAXWELL, JR., scout for Continental Oil Company at Midland, Texas, for the past 3 years, has been transferred to Wichita Falls where he will have charge of the company's land department. Carroll Mitchell is transferring from the Wichita Falls office to Midland, where he will take up Maxwell's old duties.

C. L. SUHR, chairman of the board of the Pennzoil Company, arrived at his Oil City, Pennsylvania, headquarters last week after a European trip. He was in Germany during the recent Czechoslovakian crisis, later going to Holland, France and England.

JAMES BARNETT, formerly district engineer for Carter Oil Company at St. Elmo, Illinois, has been transferred to Henderson, from where he will supervise operations in the Birk City and other Western Kentucky fields.

W. J. BUDD is scouting the tri-state area of Illinois, Indiana and Kentucky for H. L. Hunt Oil Company, making his headquarters in Evansville.

L. J. BRUNEL, vice president and general manager of Bishop Oil Company, San Francisco, is touring Mid-Continent and Gulf Coast oil centers.

CHESTER CREBBS, President Mene Grande Oil Company (Gulf) Maracaibo, Venezuela, has been in the States on a business trip.

L. CLARK MORGAN and Troy J. Steward, of Morgan Acid, Inc., and Dr. Lloyd McKinley, head of the department of chemistry at the University of Wichita, last week presented a paper on "Chemical Modifiers for Acid Treating Fluids" before the Wichita chapter of the American Petroleum Institute.

JOHN E. MULLIGAN, North Texas scout for Magnolia Petroleum Company, has been transferred from Wichita Falls to Mattoon, Illinois, for scouting duty. He has been succeeded by J. Morris Phillips, former clerk in the scouting office at Dallas.

ALFRED E. HAGBERG, purchasing agent for Cia. Mexicana de Petroleo "El Aguila" S. A. at Tampico, Mexico, is on a trip to the United States. He is now in Cleveland, Ohio.

KENNETH G. HOWARD, for the past four years office engineer in the engineering department of Mexican Gulf Oil Company at Tampico, has been transferred to the Maracaibo office of Mene Grande Oil Company.

DIED:

JOHN S. SIMPSON, 42, partner in Simpson-White Company, Coleman, Texas, drilling contractors, and John Knox, Jr., 30, Midland, Texas, employee of an acidizing firm, were fatally burned October 13 when a well near Santa Anna, Texas, caught fire while being acidized. W. P. Lacy, Midland, and Jimmy Burrage, Ranger, received minor burns.

ARTHUR G. REED, 61, who was associated with J. S. Cosden in the latter's Texas operations for nearly two decades, died October 13 of a heart attack at his Fort Worth residence. He was a native of Belpre, Ohio, and a graduate of the Ohio State University. Since retiring as a vice president of Cosden Petroleum Company last year, he has operated as an independent.

WILLIAM M. LOWRY, 63, pioneer cable tool driller of Mid-Continent fields, died at his home south of Wewoka, Oklahoma, October 10 after an illness of one year.

ALEXANDER B. FORD, California operator making his headquarters at Long Beach, died at Tucson, Arizona, October 16 following an emergency operation. Taken ill the day before his death, he had been in Tucson for a Masonic ceremony.

THE WEEK'S NEWS SUMMARIZED

Situation

The recent crude oil price cuts and the present outlook of the industry continued to be the principal topic of conversation.

The reduction in postings was criticized severely at the Texas Railroad Commission proration hearing and at the Independent Petroleum Association's annual meeting.

Many suggestions were made for remedying the situation.

At the latter meeting, oil men were told that President Roosevelt might favor enactment of a measure that would provide for control of refinery operations. This information came from Colonel E. O. Thompson, following a visit with the president.

At the Texas proration hearing, where most of the operators expressed themselves as favoring continuation of strict control, the North Texas Oil and Gas Association presented a resolution demanding restoration of the prices, cessation of buying under-priced oil, reduction in allowables for Louisiana, Arkansas and Illinois, curtailment of refinery runs and discontinuance of pipe line proration.

The majority of Texas operators have come to the conclusion that lifting of proration would throw the industry into chaos with nothing to be gained in the end. However, there were those who still favored a return to a 7-day production week. Meanwhile, there was growing anxiety over the situation in East Texas, where 4 concerns have announced plans for disconnecting from 600 wells, whose owners probably will offer their production at sacrifice prices.

One independent operator last week favored a nation-wide agreement between oil producing states, whereby each would receive their proration quota according to the amount of oil each could produce.

Frank Phillips, chairman of the board of Phillips Petroleum Company, expressed himself as favoring a somewhat similar plan. His chief difference was that it would be supervised by an agency of the federal government.

Allowables

The Bureau of Mines has estimated November crude oil demand as averaging 3,391,300 barrels daily, which is one percent larger than estimated for October. The difference is represented in the one additional day in October, as the total for the period is calculated to be below that of the preceding month. The estimate is 5 percent lower than the actual demand in November, 1937, but is due chiefly to the adding of 2½ million barrels to storage a year ago while present forecasts make no provision for stock additions.

Meanwhile, the setting of allowable quotas by the various leading states was being awaited with much interest. However, each state apparently was waiting to see what the others were going to do before establishing their figure.

At the regular monthly meeting of the Texas Railroad Commission most of those present approved the continuation of strict control, including the Saturday and Sunday production holidays.

In Kansas, there is growing concern of the effect of special allowable production in flush areas, which is now estimated to total 12,000 barrels greater than regular allocations.

A proposed oil conservation bill for Pennsylvania was voted last week by the Central Pennsylvania Oil Producers' Association. It is hoped to submit the measure to the state legislature in January.

Prices

Further adjusting of both crude oil and gasoline prices occurred last week, but in contrast with revision in earlier weeks were of minor import. Corning, Ohio, crude was cut 10 cents to 97 cents. On the other hand the Santa Maria field of California was provided with a needed market outlet, and prices were advanced 22 to 25 cents a barrel.

Gasoline tank car prices in the Mid-Continent were marked down ⅛ cent a gallon in some instances.

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I. P. A. Meeting

Roosevelt suggests control of refinery operations . . . Crude price cuts attacked as oil's economic problems are studied to find stabilization basis.

Broadening of the powers of the Interstate Oil Compact to include regulation of refining operations has been suggested by President Roosevelt as means of assisting in the stabilization of the industry. This development was revealed by E. O. Thompson, chairman of both the Texas Railroad Commission and the Interstate Oil Compact Commission following a conference with the President. Such an additional scope should help to bring other states into the compact, it was shown. Roosevelt asked Thompson to shape up a broader type of outline for the commission, and to submit it to him at once for Congressional action. Thompson declared the President had a broad knowledge of the industry, and showed a keen interest in recent price reductions, but asserted that after talking at length with Roosevelt he was convinced there would be less federal regulation in business in the future than in the past.

This was a highlight of the Ninth Annual Meeting of the Independent Petroleum Association in Tulsa last week, as it was here that Thompson publicly reported on his conference with the President on October 20.

The idea discussed by the President, Colonel Thompson told The Oil Weekly Friday night, did not involve any thought of federal control, but was along the lines of the states which are members of the Interstate Oil Compact passing necessary legislation. The national Congress, he said, would naturally have to pass legislation granting permission as it has done in other matters pertaining to the Interstate Oil Compact.

Colonel Thompson scouted the idea that any construction could be put on his visit with the President, or newspaper reports of the conference, which would indicate that he favored federal control of the oil business.

"I have never been for federal control, I am not now and never will be," he declared with emphasis. "I am for state control and for the Interstate Oil Compact because it means state control." He added, equally emphatically, "The president wants no further federal control of the oil business."

In his talk before the Independent Petroleum Association Colonel Thompson stressed the necessity for state control and expressed antagonism to federal control.

Strong attacks on the recent crude oil price reductions, discussions for establishment of production, pipe line, refining and marketing practices that would guarantee a satisfactory price structure for all producers were other features of the meeting.

The report of the resolutions committee, headed by Wirt Franklin, invited wide discussion. The report recommended the appointment of a special committee of 36 to study both pipe line divorcement and the complete disintegration of integrated companies. Such a committee would be appointed by the president of the organization and would make its report in December, 1938.

Other recommendations of this committee asked for a balance of supply with demand, limitation of imports to 4.5 percent of the total domestic demand for all products, correction of inequities in taxation and depletion practices, abolition of the federal tax on gasoline and lubricating oil, and reduction of drilling operations.

Stocks of refined products, rather than crude oil stocks, are depressing the market, according to association statisticians. A drastic reduction of gasoline and residual fuel stocks was urged by members who pointed out the weakness of the price structure of these products. The various committees reported that total stocks should be reduced to a level considerably below the 280,000,000 barrels now available, and that gasoline stocks should be reduced to around 60,000,000 or 65,000,000 barrels within the next few months.

Proration in a more equitable form should be continued between the various states, and states with no proration should fall in line, it was advocated. Heavy production in Louisiana at the expense of other states was regarded as a demoralizing market factor.

Pipe Line Divorce

Complete divorcement of the pipe line branch was urged by several producers. It was shown during committee meeting that 20 percent of the oil withdrawn from storage during the recent stock reductions had been in storage eight years or more. The overproduction of 1937 was regarded as a factor in the present trouble.

Continuation of the Interstate Oil Compact and the Connally hot oil law was urged. The Public Relations Committee urged that the public be discouraged from the belief that the petroleum industry is composed almost entirely of major integrated companies.

Unnecessary Drilling

The open report of the sub-committee on unnecessary and unprofitable drilling occasioned considerable bickering, but the report was adopted at the general session October 20. S. A. Guiberson, Dallas, spoke against the recommendations that wide spacing rules be observed in field development. He stated that in West Texas a well might not drain as much as five acres, and drilling on a wide-spacing plan would not fully drain the formation. He added that in the East Texas field even one well to five acres was not enough to drain the field most profitably, and that other fields were similar in the Woodbine sand. One well to every acre in the East Texas field would pay out, Guiberson claimed. Two or three members strongly supported the wide-spacing plan, however, and it was adopted with a few amendments.

This report stated that enormous losses were being sustained by the oil industry through the drilling of unnecessary wells, that the drilling of unnecessary wells was occasioned largely through the failure of operators to adopt proper well spacing programs, and that the remedy is the adoption of wider well spacing programs coupled with the allocation of allowable production on a basis which will give due consideration to acreage or reserves and thus eliminate the encouragement and necessity for drilling unnecessary wells. Worthwhile progress has been made toward effecting a remedy, but enough has not yet been done to give substantial relief, it was shown. Operators continue to drill unnecessary wells in large numbers, with the result that the per-well allowables of prorated wells are continuously decreasing at an alarming rate, and the pay-out period for individual wells is being continuously extended.

In many of the new fields in the Gulf Coast, West and Central Texas, Oklahoma, Arkansas, and Louisiana, operators are requesting spacing programs which call for 20-acre spacing. This is encouraging and shows that the continued emphasis for the necessity of wider spacing is molding public opinion in that direction. The increase of the drilling unit from the standard 10 acres to 20 acres does not sufficiently reduce the number of unnecessary wells drilled to give adequate relief.

In New Mexico allocation of allowable production for the most part is on the basis of 40-acre proration units without regard to the number of wells drilled on the unit. As a result drilling has been largely limited to one well per 40 acres, and the benefits of wider spacing can be shown clearly by comparing the statistical position of the industry in New Mexico today with what it would be had the wells there been drilled on the standard well to ten acre pattern. The pay-out status on these wells on 40 acres averages about three years, but would be lengthened to more than twelve years had the wells been drilled on a well to ten-acre spacing pattern.

It then follows that New Mexico is in the best statistical position of any of the states due wholly to the far-sighted attitude of the operators and the regulatory body in that state. East Texas with the Saturday and Sunday shut-downs is producing an average of 116 barrels per 40 acres, or over twice as much per acre as New Mexico. In Western Kansas with an average allowable of 31 barrels per well on prorated wells the production is 124 barrels per 40 acres, or 2.3 times that of New Mexico.

It has been found that under proper reservoir control where the oil is kept in a liquid phase in the reservoir and withdrawn at slow rates of flow, one well will drain many times the area that it would under old methods of open flow or greater rates of flow which allowed the gas in the oil to come out of solution in the reservoir, the report stated.

The following plans for spacing of wells and allocation of allowable pro-

duction to wells drilled in any pool were suggested:

1. Select a proration unit for each pool based on the reservoir characteristics of that pool which would be the largest unit that one well would substantially drain at an efficient rate of withdrawal.

2. Select a minimum drilling unit which would be of such a size that to drill upon a smaller unit would result in waste or hazard.

3. One or more wells could be drilled on the proration unit provided no wells should be drilled on units less than the drilling unit.

4. Tracts smaller than the drilling unit should be required, under protective regulations, to pool their acreage with adjoining properties, so as to form a drilling unit.

5. Tracts smaller than the proration unit should be encouraged to unitize with owners of adjoining acreage to form a full proration unit.

6. The allocation of oil to each well would depend upon the position of the well in the unit.

7. It is suggested that all allocation formulae give full consideration to acreage and recoverable oil in place.

8. There may be cases where allocation to leases can be based on well densities of a lease, provided only the proven area of the lease is used for allocation.

9. The basis for all allocation formulae should be prevention of drainage across property lines which is not equalized by counter-drainage.

The report recommended that upon the discovery of each new pool, and before a second well is commenced therein, each and every operator who owns acreage lying within the probable limits of the pool take the initiative in working out a well-spacing program coupled with a plan for allocating allowable production in the pool which will eliminate, or at least discourage, the drilling of unnecessary wells.

Balancing Supply and Demand

The report of the "Committee on Balance of Supply With Demand" stressed the importance of corrective steps that should improve the price structure. The committee also emphasized the soundness of the Bureau of Mines estimates of consumptive demand, and added that these estimates have provided an accurate basis upon which state regulatory bodies might gauge both production and consumption.

The report called attention to the fact that while daily production of crude oil during the April-September period was about 3,300,000 barrels, crude petroleum stocks were reduced 26,500,000 barrels. While production was restricted some, refiners ignored the suggestions and instead of restricting their operations, sought an extra supply for refinery runs from above-ground storage, the report stated. This withdrawal, by going into refined products, resulted in an excess of motor fuel stocks of about 7,000,000 barrels above the estimate recommended by the committee, it was claimed. The committee report pointed out the unsound conditions that had developed in curtailing production to restrict waste, as follows:

A. That some producers of crude petroleum in some oil producing states were producing oil from wells in such large quantities as to create underground waste.

B. That some companies engaged in the production as well as the purchase of crude petroleum were prorating wells of small and settled production, while at the same time were producing oil from their own wells in other states in excessive quantities.

C. That the drilling of unnecessary wells still continued to be a serious problem.

In order to obtain a total gasoline inventory position on December 31, 1938, of 60,000,000 barrels, it was estimated that total production of crude oil per day during the last three months of this year should average 3,044,000 barrels, of which production east of California would be 2,400,000 barrels daily. With gasoline inventories at 65,000,000 barrels, production east of California should average 2,500,000 barrels daily; and with gasoline stocks at 70,000,000 barrels on December 31, the production of crude oil should be about 2,600,000 barrels east of California, the committee reported.

It was estimated that production that would result in gasoline inventories of 60,000,000 barrels at the end of the year, would cause gas oil stocks to be 28 percent lower, east of California, than at the end of 1937, and residual fuel oil stocks would be 8 percent lower.

The committee reported that in view of the fact that "our excess supply is represented to a large extent by the excess of residual fuel oil stocks which has now reached the highest point in the history of the industry; and since these stocks have resulted to a large extent from the excess importations of residual fuel oil; that the domestic petroleum industry has already restricted its production by law through the various state regulatory bodies to a position consistent with the balance of supply with demand program; that the restriction of imports is not within the power of the industry or the state governments; it is recommended that the federal government take such steps as are proper to restrict further importation of residual fuel oils."

The committee recommended that Congress enact a law that would limit the imports of crude petroleum and its products into the United States to 4½ percent of the total consumptive demand (including exports). An excise tax of $2.00 per ton was recommended for asphalt importations into the United States. Excessive imports of residual fuels for "supplies for vessels" free of excise taxes were regarded as unnecessary, and the elimination of such imports was urged.

Officers Reelected

Officers reelected included Charles F. Roeser, Roeser & Pendleton, president; Harold B. Fell, Simpson-Fell Oil Company, executive vice president; R. B. Brown, general counsel; T. J. Steuart, assistant to the president; N. T. Gilbert, treasurer; C. E. Buchner, executive manager; T. H. Barton, vice president for Arkansas; A. J. Crites, vice president for California; W. M. Downing, vice president for Colorado; P. E. Taggart, vice president for Illinois; D. R. Lauck, vice president for Kansas; P. G. Blazer, vice president for Kentucky; B. A. Hardey, vice president for Northern Louisiana; C. A. Smith, vice president for Michigan; W. M. Fulton, vice president for Montana; C. J. Dexter, vice president for New Mexico; T. M. Bishop, vice president for Ohio; C. H. Wright, vice president for Eastern Oklahoma; W. Scott Heywood, vice president for Southern Louisiana; Leigh Taliferro, vice president for Western Oklahoma; Ralph T. Zook, vice president for Pennsylvania; L. A. Grelling, vice president for Northeastern Texas; J. E. Farrell, vice president for Northwestern Texas; P. R. Rutherford, vice president for Southeastern Texas; Al Buchanan, vice president for Southwestern Texas; W. S. Hallanan, vice president for West Virginia.

Richberg Speaks

Donald R. Richberg, former NRA chief, addressed the association at the annual banquet, October 21, on "Business and Democracy." He stated that the petroleum industry has furnished a wonderful demonstration of all the good and evil in every possible business practice. Its history has been a processional of free competition, cut-throat competition, monopoly, disintegration of monopoly, price wars, price fixing, controlled and uncontrolled production, voluntary and involuntary cooperation, with thousands of lawsuits always marching by the judicial reviewing stand, with the big guns of state and federal laws ever threatening taxes and tyranny despite their picturesque camouflage of good intentions, with hot oil as common as hot dogs, with martial laws, legislative battles, private warfare and hand-to-hand conflicts part of the regular order of business, and with the Marquis of Queensbury rules generally preferred to Robert's Rules of Order, he said.

Richberg stated that he had made a quick survey of his experiences since 1933, and finally had become convinced that the peculiar problems of the industry must be solved by the composite intelligence of those who have invested in it their lives; and that neither learned economists nor well-meaning politicians can lead the way to their solution. In efforts to stabilize the production and distribution of petroleum products, to prevent the indefensible waste of a most important natural resource, to maintain fair prices for consumers and fair rewards to workers managers and investors throughout the nation, both individual and national interests must be safeguarded, he added.

If there ever was an industry in which civilized competition was necessary, it is the petroleum industry, Richberg stressed. At the same time here is a product which cannot be stored indefinitely in large quantities, so that transit from the ground to the ultimate consumer must be practically a continuous process. Does any well informed person believe that the alleged laws of supply and demand should be allowed to operate upon such an industry without some corrective, stabilizing controls to establish and protect individual rights, to prevent intolerable waste and to avoid periodic cycles of feast and famine?

It is also comforting to realize that most people in this industry want to

have cooperative planning and self-regulation developed by ways and means of self-government within the industry, Richberg said.

R. A. Cattell, chief engineer Petroleum and Natural Gas Division, U. S. Bureau of Mines, addressed the meeting October 20 on "The Value of the Studies of the Bureau of Mines to the Oil and Gas Producer." He stated that the efficient, economic and equitable recovery of oil and gas from a reservoir depended essentially upon proper use of the energy available from the reservoir and reservoir fluids.

Russell B. Brown, general counsel for the association, presented his annual report in the form of an address. He touched on the Pollution Bill, Interstate Oil Compact, Connally Hot Oil Law, importation of foreign oil, excise tax on asphalt, gasoline-alcohol blend, Venezuelan trade agreement, monopoly investigation, natural gas, labor laws, anti-trust laws, and general legislation. He favored continuation of the Connally Act, and approval of the Interstate Oil Compact.

The report of Charles F. Roeser, president, was well received at the October 20 session. He stated that out of this presentation of conservation work, which the petroleum industry has been engaged in without blaring of trumpets or public advertisement, has come a renewed interest in those questions involving proration and well drilling. The widespread discussions of the need for equitable allocations among the petroleum states and among pools within states, and of ratable takings within its pools have given new force and support as it became clear in the thinking of thousands of oil men that the stability of the domestic petroleum industry depended upon a proper balance of supply and demand.

The report of H. B. Fell, executive vice president, touched on almost every phase of the industry. He stated that since the oil industry is a national industry and not limited to any one state, it becomes essential for every oil producing state to join the Interstate Oil Compact, and through cooperative effort see that equitable allocations between the states of the total market demand are effected. When wells in one state are permitted to produce large quantities of oil, in many instances in

Comments on the Situation

Crude price cuts made 10 days ago have precipitated much discussion. The reduction in postings has been criticized severely by some. Others have proposed widely differing actions be adopted under the circumstances by the industry. These have ranged from lifting of proration entirely to stricter regulation—to government control—and to some means of controlling refinery runs to stills.

Some of the comments and developments that took place are presented below:

I.P.A. learns refinery control may be favored by president

At the Independent Petroleum Association of America's annual convention the cutting of crude prices was denounced, and it was announced that Colonel E. O. Thompson, of the Texas Railroad Commission, following a visit with President Roosevelt thought the president might favor legislation whereby the Interstate Compact might be given power to govern refinery activity. More details on this development appear on page 54, along with others that took place at this convention.

Seven-day Texas week is a possibility; but disastrous

Don't discount too quickly the brief news dispatches about Colonel Thompson toying with the idea of slapping all Texas on marginal well allowance and on 7 days production per week. The total output for the state on marginal well basis is within a few thousand barrels of what is recovered on a 5-day week, plus the numerous present exemptions.

East Texas operators could afford to get behind such a plan in a big way, as their base allowable was 518,885 barrels daily on October 18 from 25,622 wells, including 19,358 wells classed as marginal producers. The base allowable figures about 2/10 to 3/10 of a barrel above the 20-barrel marginal level per well. There are 470 wells that are short 3910 barrels daily in making their marginal allowable, so that would have to be considered.

Naturally Eastex would get a big boost when all fields go on marginal basis, and many fields that have always enjoyed rather large quota per well would suffer.

Such a plan would create a major upheaval in oil buying circles as they are all set to get certain volume of oil from preferred fields, and a sudden change would play havoc, possibly sending some to other states. In other words some of the more restricted buyers would be shy in some fields and all would be long in Eastex.

Some think that the Railroad Commission would experience a court challenge if all wells in a given area are levelled off regardless of ability to produce, etc.

It's a cinch that if the commission ever induces the operators to adopt such a plan that some of the "favored" fields probably never would regain their comparatively high allowable per well.

The idea naturally would appeal to field labor in general in order to get back on a 7-day basis.

Eastex is experiencing another siege of unconnected wells due to independent pipe line companies checking out because of competition of Arkansas-Louisiana and particularly East Texas confiscated oil being released by Attorney General McCraw. Some 600 wells are involved in 4 companies' withdrawal, and not much hopes of inducing any one to pick them up. If the field goes back to a 7-day production week, many of the pipe line companies will be connected to a surplus of wells. It is a case of insufficient pipe line capacity with some, although others have a surplus of room but do not desire the volume that would be released. You can't pile up back allowable and get away with it in East Texas, so operators that fail to get connections are going to offer their production at sacrifice prices.

Remedy for the oil industry

By N. F. WERTHEIMER,
T. W. M. Oil Producing Company,
Dallas, Texas

The present deplorable condition of the oil business could have been avoided easily had the leaders in the various branches of this widespread industry taken note of the forewarning events which occurred during the past year. There is no consolation in "might-have-been." Since the situation is at hand, we need remedies, and not criticism.

To begin with, the present proration status should not be changed at this season of the year, nor the Saturday and Sunday shut-downs lifted. Keep the industry in check with supply and demand. We have it pretty well in hand at the present time. Even under these circumstances, on October 10, the supply was so great as to cause a reduction in price of ten percent and over. Lifting any bans or increasing proration would again throw us into the chaos of 1933.

A nation-wide agreement between the oil producing states, Texas, California, Oklahoma, Louisiana, Pennsylvania, Kansas, Illinois, and all other states which have oil resources, should be endeavored to be entered into, whereby each state should receive their proration according to the amount of oil each

excess of what should be produced if underground waste is to be prevented, while wells in other states of similar capacity and under similar conditions are restricted in their productions to small amounts, there can be no equitable solutions, he said. This is particularly true when it is considered that integrated companies are producing excessixe amounts of oil from their own wells in some states, while at the same time they are enforcing pipe line proration on producers in other states where the allowable is already exceedingly low, he added.

Harry G. Moock, vice president of Plymouth Motor Company, addressed the luncheon meeting October 21 on "Viewpoints on the Brighter Side." He stated that in spite of all efforts for greater fuel economy in the modern car, it is startling to find that the average consumption per motor vehicle in use has risen from 394 gallons in 1923 to 655 gallons in 1937.

Stripper Well Association condemns crude price cuts

The annual meeting of the National Stripper Well Association was held October 18, at Tulsa, having been arranged to precede the meeting of the Independent Petroleum Association of America. This meeting was featured by sentiment unfavorable to recent crude-oil price reductions, and a desire to form some type of cooperative body that would protect the interest of the small producer.

A highlight of the program was an address by Wirt Franklin on "Economic Importance of Stripper Wells." He stated that stripper wells were the backbone of production in many producing districts. Such wells never should be prorated, Franklin added, although plans along this line have been attempted in the past. Abandoning stripper wells is like skimming the cream and throwing the milk away, the speaker claimed. Of the 355,443 producing wells in the United States, only 37,835 are flowing, he stated. And of the remaining 317,608 wells, 280,000 are stripper wells. Of the 13,500,000,000 barrels of oil in total reserve in this country, about 10,300,000,000 barrels are

state is capable of producing, thereby showing no favoritism. A desperate effort should be made by the governors of these states to stabilize the market of this industry, which is the largest in the world, and belongs to the people of all the states, particularly the oil producing states, as it reduces their taxes, preserves their natural resources, and leaves the coming generation with something besides an over-indebtedness caused by physical waste.

Another important feature of this plan should be the limitation of production on the first well in a new field; and upon the completion of more producing wells, said field should immediately be placed on a proration basis.

The independent operators blame the major companies for the critical condition of the industry. This is untrue . . . the fault belongs to all of us, and chiefly to the independent operators, for it is among them that the hot oil producers work. There are entirely too many people connected with a major company to get into this part of the industry.

Now, as to oil confiscated by the state, this should not, by any means, be permitted to be placed on the market and sold below the price of the same gravity oil produced by legitimate producers, but could be traded to some refiner in exchange for by-products to be used by the state at the market price.

Another great evil is the importation of oil, confiscated or otherwise. Such oil should not be permitted in competition to oil produced by people who have purchased their property, paid drilling and other development costs, without duty and tax being levied on it, putting it on a competitive basis. No oil, or its by-products, should be permitted to come into this country by pipe line, tanker, seagoing vessel, or other means of transportation, without the duty and tax being levied on it. All oil can be traced to its original sources without any great trouble.

This problem is not one that belongs entirely to the oil industry, but to the entire nation. The schools, the railroads, the laborers, farmers —all of the people—reap benefits from this industry, and should cooperate to their fullest extent in getting it stabilized and stopping physical waste of their natural resources. It is, therefore, to the benefit of all the people to insist upon something being done to conserve the world's greatest industry. Oil.

Five plank platform urged by North Texas Association

At the regular monthly proration hearing before the Texas Railroad Commission the situation came in for much discussion, and a resolution from the North Texas Oil and Gas Association asked for (1) restoration of the price (2) cessation of buying of under-priced crude (3) reductions of allowables in Louisiana, Arkansas and Illinois (4) curtailment of refinery runs and (5) discontinuance of pipe line proration. Unless these were adopted by major concerns, the association threatened to seek certain legislation, which would include divorcement, and to ask for a monopoly investigation. Further details of discussions at the Texas proration hearings appear on page 59 of this issue.

Frank Phillips Wants modified government control

Frank Phillips, chairman of the board of Phillips Petroleum Company, declared that governmental policies have left the oil industry "like a ship without a rudder" when addressing the 25th annual National Business Conference October 17 at Wellesley Hills, Mass. He declared that congress should enact legislation to conserve oil and natural gas by prevention of waste.

"I am not in favor of absolute government control of the oil industry in a sense of national utility," Phillips declared, "but I firmly believe that if all the oil producing states are unwilling to join the compact and extend its power to maintain complete control of oil production, then federal control within constitutional limits of all phases of the industry is inevitable."

Legislation should be enacted authorizing an agency of the federal government, supervised by the secretary of the interior, to restrict volume of crude oil and refined products that may move in interstate commerce, even to the extent of regulating throughput of refineries whose products are manufactured for movement and sale in interstate commerce, Phillips said. He added that the federal government should continue to prohibit movement in interstate commerce of illegally produced oil as at present under the Connally Act.

The same agency should control trade practices in the industry, he said. Before doing this it will be necessary to change our present restrictive laws which in recent years have permitted development of unethical trade practices. He recommended amending laws so that the industry with government approval could enter into constructive agreements affecting trade practices and operating policies.

Phillips said that under proper regulation the oil industry never was in a better position to go forward. Consumption of products is highest in history, crude reserves are ample and with present low cost of gasoline and prospects for further reductions, there need be no fear of competition from any other motor fuel, from whatever source. He predicted continued rapid oil industry growth.

He said he was hopeful that in the near future it will be possible for representatives of the oil industry to sit down around the table and work out their problems in an atmosphere of harmony, rather than in the courts as antagonistic litigants, and voiced the belief that a more friendly attitude by government toward business and the changes in restrictive laws to permit reasonable regulation would restore confidence so that industry generally could go forward, absorb the unemployed, eliminate need for further pump priming and create a foundation for a true and lasting prosperity.

in the heavily developed areas. And of this latter total, 2,800,000,000 barrels represent flush reserves, 2,600,000,000 barrels semi-flush reserves, and 4,900,000,000 barrels, or 48 percent of the total, represent stripper reserves.

Franklin strongly criticized major purchasing companies for their recent action in reducing crude oil prices, and stated that such an action was wholly unjustified. He said that large purchasing companies often hide their identity behind small subsidiary companies that take the lead in price cutting. Gasoline prices drop in sympathy with crude oil price reductions and the same old chiseling continues, he claimed.

Franklin stated that he had no patience with the reasons advanced for the recent crude price slashes, and added that something ought to be done about it. He cited the 29,000,000-barrel reduction in crude oil stocks during the past year as a reason for continuation of former prices, and called attention to the fact that stocks are the lowest in 16 years. He added that the lower price schedules had started the entire industry on the toboggan.

Unless the majors take a long-range view of the situation, more serious trouble will follow, Franklin stated. He added that conservation should not be discarded at this time, as such a course would revert to the law of the jungle. Only the strongest companies could survive under chaos.

The whole situation looks hopeless under the present set-up, he stressed, and suggested the thought that a general umpire might be appointed. Whatever hurts the independent hurts the major, Franklin contended.

The indictments at Madison were a great mistake and a calamity, he said, since they have chilled any further attempt to correct existing evils.

On the divorcement of one department from another, Franklin stated that it was unfair to establish low prices in the producing, refining and marketing departments that must be passed on to the producer of crude oil. Some integrated companies have shown large profits and paid large dividends, although only the pipe line department operated at a profit, he added. This was possible because of high pipe line rates during low crude-oil prices, he claimed.

Executive Report

H. B. Fell, executive vice president of the association, presented his annual report at the meeting. He stated that 79 percent of all producing wells were strippers, and that nearly 50 percent of known reserves underlie stripper leases. Crude-oil stocks are the lowest in 16 years, the report showed, but gas oil and fuel oil stocks are slightly excessive at this time. Imports of fuel oil have seriously weakened the price structure in this country, and should be restricted, Fell added. The report stated that stocks should not be higher than are required to meet demands without interruption.

Russell B. Brown, general counsel for Independent Petroleum Association at Washington, addressed the meeting on "Economic Trends Affecting Stripper Wells." He stated that certain producing districts, particularly the Lou-

[*Continued on page 65*]

Allowable Picture

Bureau of Mines forecasts seasonal decline in demand for month of November . . . Texans want strict control continued . . . Difficulties in Kansas

Bureau foresees little demand drop in November

Seasonal decline in the demand for petroleum products will bring total November requirements of crude oil below that of October. However, the daily average required during the coming month will be 3,391,300 barrels, which is 24,500 barrels, or one percent more than the estimate for one-day longer month of October, it was forecast October 21 by the Bureau of Mines. The anticipated November average will be five percent lower than the actual demand for domestic crude in November, 1937, it was pointed out, but the decline is explained by the bureau as due chiefly to the fact that no provision is made in the forecast for an increase in gasoline stocks during the coming month, in contrast to an actual increase of 2,587,000 barrels a year ago.

Fuel oil stocks, the bureau calculated, will be sufficient to supply early winter needs without requiring heavy runs of crude oil and consequent excessive production of gasoline.

Discussing the current situation, the report pointed out that daily average crude production and runs to stills during the four weeks from September 3 to October 1 each averaged 3,248,000 barrels. During this period total crude stocks, including heavy crude in California, declined 4,196,000 barrels, 3,852,000 barrels of which was in domestic grades. The daily average withdrawal from domestic grades, added to the production, gives 3,385,000 barrels as the apparent daily average demand, compared with the bureau's estimate of 3,444,300 barrels for September. "Indications point to a comparatively low demand for gasoline in September and to delay in exports of crude oil in the last half of that month," the bureau commented.

Motor Fuel Unchanged

Motor fuel demand during the coming month, the bureau estimated, will be 42,700,000 barrels, almost the same as for November, 1937.

The estimate of motor-fuel exports, reflecting forecasts of exporters, has been lowered from 4,400,000 barrels in October to 3,800,000 barrels in November.

"Stocks of finished and unfinished gasoline on August 31 totaled 70,962,000 barrels," it was stated.

"According to American Petroleum Institute statistics, these stocks declined about 2,300,000 barrels during September, bringing them to approximately 68,700,000 barrels as of September 30. Although this is approximately 3,300,000 barrels higher than the level of stocks on September 30, 1937, the bureau is estimating no change for the month of November, as it is not likely that they will decrease during that month. On the other hand, there is no justification for their increasing in view of the generous supply of fuel oil now available."

Benzol and direct sales and losses of natural gasoline have been estimated at 800,000 barrels, making refinery production 45,700,000 barrels, to be distributed among the various districts as follows: East Coast, 6,070,000 barrels; Appalachian, 1,600,000 barrels; Indiana-Illinois, 7,930,000 barrels; Oklahoma, 3,090,000 barrels; Kansas-Missouri, 2,610,000 barrels; Texas Inland, 3,220,000 barrels; Texas Gulf Coast, 11,430,000 barrels; Louisiana Gulf Coast, 1,460,000 barrels; North Louisiana - Arkansas, 900,000 barrels; Rocky Mountain, 1,160,000 barrels; California, 6,230,000 barrels.

Natural-gasoline consumption at refineries in November is estimated as 8.7 percent of the total production, and the yield of straight-run and cracked gasoline is estimated at 44 percent, the latter somewhat lower than the trend of recent months as it is contemplated that the relatively low crude runs to stills will require a maximum distillate yield. The application of this yield to the straight-run and cracked production of 41,720,000 barrels gives crude runs of 94,740,000 barrels, or 3,158,000 barrels daily. Foreign crude runs are estimated at 2,100,000 barrels.

Exports Decline

The estimate for exports, which was 7,000,000 barrels for October, has been lowered, in accordance with forecasts received from the largest exporters, to 6,500,000 barrels for November. The estimate for crude used as fuel and losses has been increased from 2,400,000 to 2,600,000 barrels. In anticipation of the usual seasonal change in this factor, the total demand for domestic crude for November, as indicated by the bureau's estimate, is 101,740,000 barrels, or 3,391,300 barrels daily, allocated among the states as follows:

Demand by States

Texas, 1,371,000 barrels against 1,359,000 barrels in October; California, 616,700 barrels against 619,000 barrels; Oklahoma, 515,000 barrels against 523,600 barrels; Louisiana, 256,300 against 248,400 barrels; Kansas, 164,300 barrels against 163,400 barrels; New Mexico, 111,000 against 109,200 barrels; Wyoming, 74,700 barrels against 69,700 barrels; Illinois, 64,300 barrels against 51,900 barrels; Arkansas, 52,300 barrels against 54,100 barrels; Michigan, 50,300 barrels against 53,900 barrels; Pennsylvania, 44,700 barrels against 44,300

barrels; Kentucky, 17,700 against 16,100 barrels; New York, 13,700 barrels against 14,300 barrels; Montana, 13,300 against 13,800 barrels; West Virginia, 10,300 barrels against 10,100 barrels; Ohio, 9000 barrels against 9100 barrels; Colorado, 4000 barrels against 4300 barrels; Indiana, 2700 barrels against 2600 barrels.

Texans approve strict curtailment program

Continuation of the Sunday shutdown was approved at the Texas Railroad Commission Statewide hearing on October 15 by operators other than those in the East Texas field. East Texans insisted that they had borne the brunt of curtailment long enough and that 14 barrels per well a day was insufficient to meet the obligations with which they were burdened.

Producers from the rest of the state, however, were firmly convinced that there would be no profit in any program which called for excessive production with consequent price declines. They felt that continued restraint would be profitable even in the face of prices currently low and insisted they had no desire to sell their oil for less than its true value.

The meeting was in the nature of an open forum. From time to time Commission Chairman Ernest O. Thompson interrupted the discussion of prices and price control to announce that the commission, itself, was interested in conservation only and to remind the producers that the anti-trust laws were still in effect.

Independents Puzzled

The puzzle to the independents was how the price could decline when production had been restricted so rigorously.

This was the attitude of most of the East Texans, and while producers from other sections favored continued control, some fairly radical proposals were presented from the North Texas Oil and Gas Association and from the West Central Texas Oil and Gas Association.

Remedy Suggested

A resolution presented to the commission by the North Texas Oil and Gas Association read in part as follows:

"We earnestly submit that the real evils from which the industry is suffering are caused by the "problem children" within the family of the major purchasers themselves, namely, the refining and retail marketing divisions. They have it within their power to remedy these evils in their own household without touching production and we call upon them to do so immediately. In order to correct the present vicious situation, we insist upon the prompt application of the following remedies by the major companies:

A. Restoration of the price of crude oil.

B. Cessation of buying of underpriced crude.

C. Substantial reductions in well allowables in Louisiana, Arkansas, and Illinois.

D. Curtailment of refinery runs.

E. Discontinuance of pipe line proration.

This Association has consistently adhered to the principle of equity and justice to all. We have never favored a radical policy. However, if we are to be thrown into another vicious cycle of price cutting and if we are to face destruction which that will inevitably bring about, we must, with all our force, seek a speedy and effective application of a simple remedy that will for all time destroy this threat.

"We do not wish to be understood as making an idle threat. With all sincerity and in deadly earnest, if the policy of price cutting is to be pursued, we intend to seek immediate and complete disintegration and divorcement of the production and retail marketing from all other branches of the industry. This remedy is no experiment. We have the experience of the packing industry before us.

"We might also request a full and immediate investigation by the Congressional Monopoly Committee."

Major purchasers were fully criticized and generally held responsible for the price decline which has taken place in the past two weeks. J. C. Hunter, speaking for the West Texas Oil and Gas Association, expressed the opinion that the industry would cure itself within a few weeks. He insisted that the industry could cure its ills if it would, and he counseled restraint to see how the problem could be worked out.

East Texas Pressure Down

The Commission reported the continued decline in the bottom-hole pressure for the East Texas field. The drop totaled 4.6 pounds for the month ending October 8, a decline of .404 pounds per million barrels of allowable oil. The allowable had averaged 379,444 barrels per day during the month.

Nominations filed with the commission by Texas purchasers indicated a demand for 1,549,938 barrels daily which is 16,915 barrels below the daily average for the month of October.

Much of the hearing was given over to a discussion of exports and imports and the commission presented figures to show the normal trend of the crude oil market during the past two years.

Smith favors higher Texas allowable

Speculation on the Texas November proration order was colored last week by a statement from Commissioner Lon Smith recommending that the Texas allowable follow the Bureau of Mines recommendation.

This would mean an allowable of 1,371,000 barrels daily, 129,934 barrels higher than was in effect during the first 15 days of October. The October figure of 1,241,066 barrels was achieved only by closing down fields two days weekly.

Complete revision of proration orders would be required if the Smith plan is followed. If the commission permitted wells to operate every day but Sunday, the Texas allowable would rise 244,115 barrels, to an average of 1,485,181 barrels daily for November.

In a prepared statement Smith said that commission shutdowns might be responsible for the price cut. "The holiday in oil production in Texas proclaimed by the Texas Railroad Commission has been largely responsible for closing Texas refineries, driving legitimate labor to other oil producing states . . . and inviting the importation of cheaper oils from Arkansas, Louisiana and Mexico.

"The unsettled, unstable and moody situation resulting from the uncertain and varying program of the commission touching oil production . . . is calamitous and conducive to a continuously disturbed condition in the oil industry . . ."

California to keep same allowable

California's crude allowable is expected to remain unchanged for November, when the Central Committee of California oil producers and the allocation committee meets on November 27. They are slated to adopt the same schedule of 610,000 barrels daily and a tolerance of 5000 barrels daily to care for new wells. The present quota has not been changed in four months.

Special allowable grants of growing concern in Kansas

There is growing concern in Kansas as to the effect special allowable production of flush areas may have upon the statewide production situation. Within recent months a steadily increasing volume of crude has been produced under these special allowables, which are set above the decline log curve adhered to in a majority of the fields. More than thirty restricted areas have obtained allowables that exceed production rates established from the basic curve. Increasing from an inconsequential volume at the start, the production from special allowables is now 12,000 barrels per day greater than regular allocation to said pools would have been.

The nominations from these individual pools, it is pointed out, are often below prevailing market prices, but regardless of this they definitely decrease the nominations from areas held to the production curve, as applied on the basis of demand for the entire state. In another manner the result is considered to centralize crude takes rather than spreading them over the various districts. This is considered as being a direct handicap to the possibility of future connections to new areas of production.

The most marked detrimental result of increasing special allowables is to the stripper producer in the eastern half of the state. The higher allowables, and the recent price cut, combine to place a heavy burden on the stripper operator. It is held that there is no question but that stripper production and the stripper operator is being penalized.

Approximately 73 percent of the wells of Kansas or about 14,000, produce only ten barrels or less per day. Also, the gathering cost of crude from these areas is far greater than the cost of gathering from flush pools. In addition to these important factors the general operating costs as well as the tax burden has risen steadily from 1933 to the present, forcing the shallow or stripper operator to cut in every way possible. There is no method remaining by which the stripper can hope to cope with the situation, and as the cost of gathering his crude is far above the cost in other areas producing crude of either

equal or greater market value, he is further handicapped. With his margin of profit cut to zero and being faced with the possibility of loss of what market he has held throughout recent years, he has no incentive to either development or maintenance of what production he has.

It is conceived that a possible result would be the premature abandonment of many areas of present small production, and the retardation of planned activity. Either of these would result in waste so far as future crude from stripper areas is concerned. Secondary recovery projects would also be influenced.

Pennsylvania producers propose conservation law

Approval of a proposed oil conservation bill for Pennsylvania was voted last week by the Central Pennsylvania Oil Producers' Association, preparatory to submitting it to other state producers' organizations for endorsement or possible revision, and submission to the state legislature in January.

The measure was prepared by an association committee comprised of E. C. Breen and W. J. Brundred. It was explained that the draft was tentative and subject to revision at the suggestion of other producers' groups.

The preamble to the measure proclaims it an act "to protect the crude oil resources of this commonwealth from waste and destruction; defining waste, creating a commission to effectuate the purposes of the act and defining its powers; providing remedies for the prevention of such waste and destruction, and providing penalties."

The commission, consisting of three members "preferably persons thoroughly familiar with the production of oil," would be named by the governor, one member to represent the Bradford district, one southwestern Pennsylvania and the third the intermediate district.

The act would prohibit waste which, in addition to its ordinary meaning is defined as including "economic waste, underground waste, surface waste and waste incident to:

"(a) the production of crude oil in excess of reasonable market demands;

"(b) the production of crude oil in such quantities from any oil pool or oil area of this commonwealth which might cause or tend to bring about the abandonment of wells in other pools or oil areas in this commonwealth, and

"(c) the production of crude oil from any oil-bearing sand or sands of this commonwealth under such circumstances or in such quantities or in such manner as to render liable to abandonment wells of settled production in other pools and areas of this commonwealth and the consequent loss to the public of the recoverable oil reserves thereunder at reasonable cost."

The commission would be empowered to fix allowables for any pool or area and individual wells would be held to their proportionate share of such allowable. Oil produced in excess of allowable or "any order of the commission shall be deemed illegal oil, and wherever found may be attached and sold at the suit of the commonwealth for the benefit of the commonwealth."

A penalty of a fine not to exceed $5000 and/or imprisonment not to exceed 30 days is provided for violation of the act.

Market Situation

Gasoline prices and stocks decline further during week . . . Expected disconnection of 600 wells in East Texas area is expected to create difficulty.

Favorable factors tend to make markets steady

The market situation during the past week remained somewhat unsettled, although the storm of crude and gasoline price cutting had largely abated. And for the immediate future continued unsteadiness appears likely, especially until after November crude production allowables become known.

Obviously, the markets would be strengthened generally if strict allowables should be prescribed, whereas they would be furthed impaired by loosening of the restrictions on the country's wells.

As matters stood late last week, the markets appeared to be well able to hold up at the reduced price levels, with crude production and refinery runs held at the prevailing levels.

It was noticeable that offerings of gasoline were less free than formerly, and the prices of other refined products were steady and unchanged.

Favorable Factors

The market currently has several advantages that likely will tend to support it. The inventory situation is among the favorable circumstances. Gasoline stocks have been further reduced in recent weeks, although storage normally is increased at this time of the year. The supply now is only 4 percent smaller than at this time last year. This gain is largely justified, as gasoline demand is similarly higher than last year.

Crude oil stocks, likewise, are at comparatively low levels, although some question has been raised as to the economic level for crude storage. The present stocks amount to about 280,000,000 barrels, being the lowest for 16 years. However, the Bureau of Mines in its recent survey indicated that only 200,000,000 to 250,000,000 barrels of crude storage might be sufficient.

Another favorable factor in the market situation is the improving demand for oil. The latest Bureau of Mines monthly report on petroleum revealed that a definite upturn in oil consumption occurred in August. Domestic demand for practically all products was larger in August, 1938, than in August, 1937. In July and earlier months, consumption was running below last year's curve.

To disconnect 600 wells in East Texas

More difficulties confronted the East Texas crude market the past week when four independent pipe line companies announced intentions to discontinue oil purchases for 600 wells, representing an allowable of about 8600 barrels daily while the field is restricted to 5-day week. This development may forestall an early return of the field to a 6-day production week which is generally anticipated by other areas within the state.

Other purchasers have indicated that they are not in position to absorb the bulk of these discarded well connections, as some of the large units are operating trunk lines near capacity under the short production week. Others have ample transportation facilities, but are not in the market for additional oil for purchase above current runs.

Crude purchases by independents have declined sharply since the release of large quantities of confiscated crude and miscellaneous by-products by the attorney general's department. Local independent plant owners cannot compete in intrastate markets with the output of the refiners that operate confiscated products purchased at sheriff's sale at prices ranging up to 30 cents per barrel, plus private settlement made with original owners of the illicit oil to forestall litigation. Independent plants situated within trucking distance of the East Texas field are likewise being forced to suspend operations because of the confiscated oil competition.

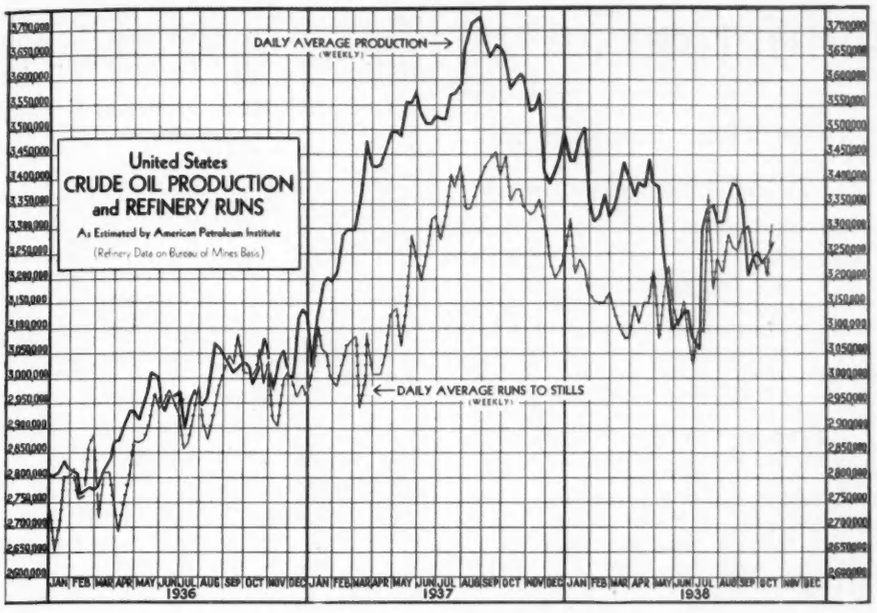
More changes in crude and gasoline prices

The past week brought some further adjusting of prices for both crude oil and gasoline, following the more important reductions of earlier weeks.

Featuring the crude market was the 10 cent reduction of Corning grade crude (Ohio) to 97 cents a barrel, effective October 18. That was the second reduction in two months, as a similar cut had been applied September 2. This is the first time Corning grade has been under $1 a barrel since September 6, 1933, when the price was 95 cents a barrel. The high for 1933-1938 was $1.42 a barrel.

In contrast, Union Oil Company of California effective October 15 posted a new schedule for Santa Maria field, California, which provided increases ranging from 22 to 25 cents a barrel. The new schedule starts at 63 cents for 13-13.9 gravity, and ranges up as follows: 65 cents for 14-14.9 gravity oil, 68 cents for 15-15.9 gravity, 70 cents for 16-16.9 gravity and above.

The Sohio Corporation, purchasing subsidiary of Standard Oil Company of Ohio formerly known as Owensboro Corporation, last week reduced its daily purchases in the Fayette County field to 50 barrels per 10 acres. The previous allowable was



75 barrels, having been reduced from 100 barrels 10 days earlier. When two wells are producing from different sands on the same location, each will be permitted a 50-barrel limit.

Gasoline tank car prices in the Mid-Continent were marked down ⅛ cent a gallon in some instances.

Natural Gasoline

Natural gasoline grade 26-70, was priced generally in the Mid-Continent markets f. o. b. refineries at 2¾ to 3 cents a gallon, and sales were reported at the same prices f.o.b. Breckenridge, Texas.

Gasoline at Refineries

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below 3⅝ to 4½ cents a gallon; 63 to 66 octane, 4⅛ to 4½ cents; 67 to 69 octane, 4⅜ to 4⅞ cents; 70 to 72 octane, 4⅝ to 5⅜ cents.

Corresponding prices in the Chicago markets were 3½ to 4¼ cents, 4 to 4¾ cents, 4⅛ to 4⅞ cents and 4¼ to 5⅛ cents.

In East Texas the most common gasoline, 60-62, 400 end point, was priced generally at 4½ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3¾ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3¾ to 4¼ cents and 3¾ to 4⅜ cents.

Fuel oil prices were not materially changed in the past week. In the Chicago market range oil was priced from 3¾ to 4 cents a gallon. The No. 1 white oil was priced from 3⅝ to 3⅞ cents, and No. 1 straw from 3⅝ to 3¾ cents. No. 2 straw was 3½ to 3⅝ cents. No. 3 oil was 3¼ to 3½ cents. No. 5 oils were 60 to 70 cents a barrel. The No. 6 oil was quoted at 35 to 50 cents.

CRUDE PRICES

New crude prices for all districts and fields, outside of California, were presented in tables appearing on page 63 of the October 17 issue. California prices are the same as those that were published on page 67 of the October 3 issue of The Oil Weekly.

Weekly oil statistics continue favorable

The latest weekly statistics of the petroleum industry indicated further satisfactory trends, having reflected continued moderate crude oil production and refinery runs and another contra-seasonal reduction of gasoline stocks.

United States crude oil production was up about 22,000 barrels in the week ended October 15, in averaging 3,271,600 barrels daily, but was 95,000 barrels a day under the indicated current market demand for domestic crude, as estimated by the Bureau of Mines for October. The production rate was 9.2 percent lower than in the corresponding week last year.

Crude Runs Up

Crude oil runs to refinery stills in the week ended October 15 averaged 3,310,000 barrels daily, having been increased sharply, from 3,205,000 barrels the week before. The operations at the new rate were, however, 2 percent lower than in the corresponding week last year.

Gasoline stocks came down about 300,000 barrels more, or to 68,426,000 barrels in the week of October 15, and were only 4 percent above the level of 65,760,000 barrels of the comparable date last year. The gasoline storage situation now is comparatively favorable, although it likely would be impaired in November if crude production allowable should be made over-generous.

Fuel oil inventories continued to increase, having risen to 152,648,000 barrels, a new high, from 152,275,000 barrels at the end of the previous week. The stocks are 28.1 percent larger than at this time last year.

Kansas rehearing set

Wichita.—A rehearing on the fixing of quotas and a rehearing in the matter of the revision of the general rules and regulations having to do with conservation and ratable production of crude oil and natural gas, the plugging of wells, the underground disposal of salt water, and repressuring and water flooding, will be held at the Allis Hotel, Wichita, Kansas, October 27 at 9 a.m.

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 25	3,492,600	3,245,000	303,294,000	74,437,000	118,659,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 8	3,249,350	3,205,000	.....	68,706,000	152,275,000
October 15, 1938	3,271,600	3,310,000	.....	68,426,000	*152,648,000
October 16, 1937	3,602,150	3,380,000	†309,009,000	65,760,000	119,155,000
Change in past year	—9.2%	—2.0%	.....	+4.0%	+28.1%

* All time peak. † Stocks, October 9, 1937.

Crude Production

Rise halted when all areas except Texas combine in drop of 29,025 barrels to 3,249,800 barrels daily.

IN contrast to the steady ride in the past several weeks, United States crude oil production during the week ended October 22 showed a decline of 29,025 barrels a day, having averaged 3,249,800 barrels daily. At this level, the production was 117,000 barrels a day lower than the indicated average daily market demand for domestic crude, as estimated by the Bureau of Mines for October.

With the exception of Texas, all principal producing states showed small declines in their daily crude production.

Texas production averaged 1,251,400 barrels daily, which was 3600 barrels more than in the previous week, but 107,600 barrels lower than the indicated market demand and 23,722 barrels lower than the allowable prescribed by the state.

California output was down 8800 barrels from the previous week's level in averaging 670,600 barrels a day. That was 51,600 barrels more than the Bureau of Mines recommendation and 55,600 barrels more than the state allowable.

Louisiana averaged 263,950 barrels daily, which was 8350 barrels less than in the previous week, but was 15,500 barrels daily above the indicated demand and 3480 barrels above the state allowable.

Oklahoma last week decreased its production by 6275 barrels a day, having averaged 450,775 barrels daily. That was 72,825 barrels less than the market demand estimate, but 22,775 barrels more than the state allowable.

Kansas showed a decrease of 1525 barrels, averaging 153,750 barrels a day, which was 9650 barrels a day less than the Bureau of Mines recommendation and the state allowable.

Santa Maria field has market again

After months of uncertainty, Santa Maria Valley oil producers are again enjoying a steady market for their crude. Effective early last week, crude purchases were resumed at prices in effect before the cut of May 20, last, when crude prices dropped from 23 to 26 cents a barrel.

Reopening of this important Coastal field followed a meeting of producers for the purpose of working out a curtailment program. The arrangement calls for a daily yield of 10,000 barrels of oil for the field. Purchasing companies restored the price of crude to the old level of 70 cents for 16 gravity oil—the price in effect before May 20—and will give the producer a trial period of 30 days in which to make the plan 100 percent effective. In addition, the plan provides that no extra drilling will take place.

Market for petroleum products in Cuba

Cuban demand for refined petroleum products in general made further progress during 1937, according to a report to the Department of Commerce from the office of the American Commercial Attache at Habana.

Based on compilations from ships' manifests, total imports of principal refined petroleum products during 1937 amounted to 684,158,323 kilograms as compared with 646,301,153 kilograms in 1936. The gain of about 5 percent was fairly well distributed among the various classifications as 13 out of a total of 19 groups showed gains compared with the preceding year, the report stated.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in October)	State Allowable in Oct.	BARRELS DAILY FOR WEEK ENDED Oct. 22	Oct. 15
TEXAS—				
Texas Panhandle			61,700	65,800
North Texas			74,300	71,500
West Central Texas			30,100	29,200
West Texas			197,300	196,100
East Central Texas			90,800	90,300
East Texas Field			370,500	370,800
South Texas			223,400	221,300
Texas Gulf Coast			203,300	202,800
Total Texas	1,359,000	1,275,122†	1,251,400	1,247,800
CALIFORNIA—				
Long Beach			54,500	54,600
Santa Fe Springs			31,200	31,700
Huntington Beach			33,000	33,300
Dominguez			25,800	28,000
Ventura Avenue			35,300	33,700
Midway-Sunset			64,900	59,100
Kettleman Hills			61,900	64,500
Wilmington			93,500	94,900
Others			270,500	279,600
Total California	619,000	615,000*	670,600	679,400
OKLAHOMA—				
Oklahoma City			104,950	108,925
Seminole Area			97,525	99,600
Fitts			38,025	37,875
Others			210,275	210,650
Total Oklahoma	523,600	428,000	450,775	457,050
LOUISIANA—				
North Louisiana			73,550	82,500
South Louisiana			190,400	189,800
Total Louisiana	248,400	260,470	263,950	272,300
KANSAS—				
Burrton-Haven			9,550	8,250
Russell County			20,675	24,125
Silica			10,025	9,925
Others			113,500	112,975
Total Kansas	163,400	163,400	153,750	155,275
NEW MEXICO	109,200	103,800	103,900	104,100
MICHIGAN	53,900		54,300	53,250
ARKANSAS	54,100		50,475	55,800
MOUNTAIN STATES—				
Wyoming	69,700		50,800	51,300
Montana	13,800		13,950	14,100
Colorado	4,300		3,500	3,600
Total Mountain States	87,800		68,250	69,000
EASTERN STATES—				
Pennsylvania Grade			72,800	73,000
Southern Illinois (New Pools)			74,700	76,500
Illinois-Indiana (Old Pools)			12,150	12,350
Others, Eastern			22,750	23,000
Total Eastern States	148,400		182,400	184,850
Total United States	3,366,800		3,249,800	3,278,825

† Daily average, Saturday and Sunday shut-downs to be continued through October 23.

* Recommendation of Central Committee of California Oil Producers.

A. I. M. E. Meeting

Advancements in technical operations are studied in two-day session held by Pacific Coast district.

A two-day session of the Pacific Coast's petroleum division of the American Institute of Mining and Metallurgical Engineers heard an interesting group of prepared papers that covered a wide range of technical subjects, including modern trends in drilling, core analysis, formation testing, cementing and casing wells, testing oil well cement, production equipment, interpretation of deeply buried structures and other field operating problems and developments.

This division of the Institute this year awarded three prizes for outstanding work. A first prize of $75 went to Iliff Anderson and Harry B. Allen of the University of California at Los Angeles for their paper "A Stratographic Study of the Calente Mountain's Miocene Zone." A second prize of $15 was awarded John Jordon of the same university for his study on "Geologic of the Middle Butte Ore Deposit and the Southeastern Part of the Middle Butte in Kern County," and a third prize was won by George Gallagher for his paper on "Engineering Aspects of Volcanology—with Emphasis on the Volcanos of Hawaii."

Abstracts of some of the technical papers presented during the meeting follow:

Theory and Seismic Reflection Prospecting

By WILLARD H. TRACY,
Superior Oil Company

The method of seismic reflection prospecting has many times been compared to sound ranging, a process which became familiar to many during the world war. According to this theory, the dynamite goes off and sends out a compression wave which meets a reflecting horizon, and returns to the surface where it is recorded, and the elapsed time of its travel in the earth accurately determined.Computations are then made on the general theory that the longer the elapsed time, the greater the depth of the reflecting bed. While this serves to give an idea of the fundamental basis of the process it suggests a simplicity which does not exist in the life history of the various waves set up by a dynamite explosion in the earth.

A seismic wave in the earth does not obey the same simple laws of propogation which apply to a sound wave in the air.

Also the transmission characteristics of the earth vary widely from place to place, and a fairly accurate knowledge of the space relationships of these variations must be had if the final results are to be understood. Besides the waves recorded and used in the reflection computations there are many other unwanted waves resulting from the explosion, and we must know something of these in order not to confuse them with the wanted reflections.

The explosion of dynamite is essentially a transient phenomenon. Immediately after detonation, a small volume of gas at very high pressure and temperature is substituted for the dynamite. Here is a source of a large amount of energy available for conversion into mechanical motion of the surroundings. How efficiently this highly compressed gas transmits its energy to the surrounding rock is not known even approximately, but it is suspected that it is not very efficient. It is also suspected that almost all the work done by the dynamite is accomplished within a very short time, measured in terms of a very few thousandths of a second. There is then a further loss due to conversion to heat within the zone of crushing of the surrounding rock. But beyond the crushed zone, a few thousandths of a second after the explosion, we should have a hollow sphere of rock, the particles of which are in motion outward from the center, and are also under compression, having kinetic energy of motion potential energy of resilience. These are the two types of energy that are present in an elastic wave, and we shall therefore expect to find such a wave or waves proceeding outwards from the source.

Reflection Prospecting Seismograph Instruments

By ARTHUR NOMANN
Superior Oil Company

During the decade during which reflection seismographs have been in commercial use, their design has been guarded as a trade secret. At present the general principles of construction are quite widely known, but designs are continually changing and each company has improvements which it keeps secret, and interchange of information is the exception rather than the rule. Field men are instructed not to discuss their instruments outside the company, and some companies seal up the various units in such a way that they cannot be inspected by their own men who are instructed to return the instruments to the laboratory when they fail to function and not attempt to fix them themselves. The technical literature on seismograph prospecting is of no value whatever to anyone wishing to construct a set of instruments and he must rely on information collected through personal contacts for data on what rival organizations are doing. This situation has undoubtedly retarded the development of instruments but as far as we are aware has not resulted in any one organization being able to develop and keep secret any construction or methods which place it greatly in advance of the remainder of its competitors.

The recording instruments may be conveniently described under the headings of (1) geophones (2) amplifiers (3) recording camera (4) miscellaneous parts.

The geophones or seismometers have the function of being actuated by slight earth movements, and generating electrical currents which are amplified and recorded.

The amplifiers come next in the sequence between the earth movement and the final paper record of the movement. The primary purpose is to amplify the signal current as it comes from the geophone to such magnitude that it is capable of actuating the recording galvanometers.

The recording camera contains the mechanism which takes the amplified signal currents from the amplifier and produces a corresponding written record. All cameras now use photographic paper as a recording medium. The paper rolls may be from 100 to 250 feet in length and from three inches to eight inches wide. The paper is fed through the recorder at rates of 12 to 18 inches per second and parallel lines across the paper spaced at intervals to represent hundredths of a second are imaged on the paper at the same time that reflection record is being taken. The accuracy of the time interval represented by the timing lines should be not less than one part in 5000. This corresponds in accuracy to a watch that gains or loses 20 seconds per day. However the mechanism of a watch is not such that it measures the very short time intervals involved to the required accuracy, and a "timing fork" is used to control the time signal. A fork is a slotted slab of metal the two tines of which vibrate at a natural frequency determined by its shape, and the character of the metal used, and is very similar to a "tuning fork" used for musical pitch control. The forks are self driven by electrical means, and are equipped to furnish an electrical alternating current which is used to control the timing lines. Tests should be made to determine that the mechanical vibrations reaching the recording truck from the dynamite explosion do not disturb the accuracy of the fork.

Determining Geologic Structure From Seismograph Records

By P. C. KELLY
Superior Oil Company

The processes involved in turning a a set of seismograph records into a geological structure map may be divided into three classes.

(1) Picking reflections on the records, to be used for the computations. (2) Determining the basis on which the computations should be made in order to arrive at correct results. (3) Making the necessary computations and plotting sections and maps. The first is usually done by the crew party chief or at least checked by him. The computing system usually originates in the head offce with occasional consultations with the party chief to provide modifications as necessary to meet special conditions. The computations and plotting are done by the party computer, with possibly one or two assistants if the calculations required are time consuming.

Marking of the reflections on the records is perhaps the most important step and the one most likely to determine the reliability of the final results. Making the "picks" is important because most of the problems that come up in practical work are connected with the problem of what can be done with poor records.

Devising the computing system to be

used is certainly the most interesting of the tasks connected with computing as it opens the way to an almost unlimited amount of delving into theoretical questions of geology and physics. The physicist may research on the elastic, behavior of rocks under great pressure, and the mathematician may produce equations which leave the simple engineer far behind. Perhaps the most desirable line of research is that leading to more exact experimental data taken in the field. After all our knowledge of what happens in the life history of a seismic wave between the time that it leaves the dynamite, and when it returns to the surface as a reflection is scanty. One finds surprisingly little data on field experiments in the literature, possibly because the tools of such research are less readily available than those of the mathematician.

Suggested Cause and Measure of Retrograde Condensation and Retrograde Vaporization

By W. H. GEIS
Consulting Engineer

Retrograde condensation is that which occurs when pressures are reduced or temperatures increased. It is the opposite of the more usual primary condensation which results from increasing pressures or decreasing temperatures.

Retrograde vaporization precedes retrograde condensation and is stated to be a function of the reservoir conditions. The cause suggested involves the solvent action of oil on gas or free gas on oil. A measure of this action is attempted by determining the changes in the volume of free gas recovered per unit of space as relative oil and gas concentrations change under isobaric conditions.

Retrograde vaporization is concluded to be a comprehensive factor in deep seated reservoirs and may result in large quantities of oil existing in the vapor phase. Upon the reduction of pressure this oil is condensed either in the reservoir, in the well or in the gas separators and becomes a part of the oil upon which gas/oil ratio values are based. Reversing the process and by analyzing gas/oil ratios into their component parts, namely the bubble point volume, the formation volume, the free gas, the free gas volume and noting changes in the latter per unit of space the extent of retrograde vaporization in a reservoir can be prophesied.

Gravitational Concentration Gradients in Static Columns of Hydrocarbon Fluids

By B. H. SAGE and W. N. LACEY
California Institute of Technology

Variations in the composition of the liquid phase in natural reservoirs which are continuous through significant ranges in elevation have been noted by petroleum technologists. In general, there is a greater gas/oil ratio and the gravity of the oil is higher in the case of the production from the upper parts of the single formation.

The possible changes in composition with elevation which would result from the establishment of thermodynamic equilibrium in a uniform gravitational field were evaluated for three different hydrocarbon mixtures about whose properties there was enough experimental information available to permit the calculations to be made. The calculations would not apply unless the materials had been in place long enough for equilibrium to be established. Due to limitations in the present knowledge of hydrocarbon behavior, it was necessary to assume that the materials involved have some of the properties of ideal solutions. The results were obtained for the case of constant temperature but it is believed that the presence of such temperature gradients as are found in underground formations would cause enhancement rather than diminuation of the effects indicated.

The first case considered was the liquid phase of a mixture of natural gas and crude oil from the Dominguez field in California.

Field Development and Field Operation

By STANLEY C. HEROLD
Consultant

The problem of determining a proper well spacing is perhaps as old as the profession of petroleum engineering. As yet there has been no close approach to a solution. For particular fields we seem to have three regular patterns for spacing—one well to ten, twenty, and forty acres, respectively.

No technological solution of the problem is possible without a consideration of economic principles. These principles fall into two categories, one which concerns the desire or policy of the individual or corporation to do business profitably and to maintain at the same time a high standard in personnel and in products. The other is that which concerns the welfare of the industry at large.

The competitive operation of many oil pools precludes the adoption by one operator of a spacing plan substantially different from that used by other operators. Someone has said, therefore, that the way to determine the proper well spacing is to read the terms of the lease. But this need not always be true. Present leases are to expire and new ones are to be written. If sufficient pressure is exerted by organized industry or by government agencies the provisions of leases in future competitive areas can be made better to suit general requirements.

What will the answer to the well spacing problem be? A different answer for each and every field is to be expected. But in general will one well to ten, twenty, or forty acres be the closest practical approximation? Or will it be one well to two or eighty acres? Any answer today is based purely upon a mere guess, and this guess in turn is supposed to be based upon practical experience.

Which is better, a wide spacing or close spacing? There are today advocates of both ideas, often suspiciously in accordance with desire. The reasons given in support of either one usually seem to be logical, but this is only true because of the lack of basic principles in technology. Both ideas cannot be correct.

Modern Trend in Drilling Equipment

By A. H. BELL, General Superintendent of Production
Continental Oil Company

Recent drilling activity has stimulated the development of drilling equipment in two directions: light portable outfits for shallow wells with emphasis on mobility and rigging-up speed; higher derricks and more powerful machinery properly utilized to reduce drilling time to excessively deep horizons. The latter phase, of greater present import, is under field test now and will prove or disprove the net operating and economic desirability of tallest derricks and heaviest equipment subject to advances in drilling technique. The many improvements in auxiliary equipment such as unitized mud tanks with integral screens, mud pump manifolds, steel casing racks, boiler plant refinements, etc., are proving very valuable. New high strength drill pipe has pushed wire line into the fore as the limitation upon practicable maximum depths.

Current Practices in Drilling Procedure

By VICTOR J. BEISSINGER
Richfield Oil Corporation

The progress of rotary drilling is determined by the weighted influence of a combination of mechanical and physical factors peculiar to the nature of oil and gas wells . . . and the cost of rotary drilling is a reflection of the value of the practices involved in the procedure. Because this cost is a substantial figure within the operating cost structure of most oil companies, management has taken an active interest in the problems of drilling. Cognizant of the value of applied engineering, it has welcomed the advent of heavy-duty equipment and has granted more or less time and money for research. Moreover, management expects a gradual reduction in the cost of drilling. With this in mind, current practices in drilling procedure generally follow a simple economic trend. Exploratory or "wildcat" wells are drilled as quickly and reasonably as open-hole drilling practices will permit; normal development wells are drilled to fit into a well engineered pattern of future exploitation.

Resume of the Technique and Economics of Coring

By S. GRISNFELDER, Petroleum Engineer
Union Oil Company

Progressing in the development of tools available for coring in rotary drilling has kept pace with the general advance in the technology of other phases of drilling and oil field equipment. There are many types of devices available for coring, and there are many types of equipment available for taking side wall or punch cores after a hole has been drilled, but this discussion is concerned only with coring as a well is being drilled with rotary equipment.

Coring has seen much advancement since the time when the approved method was with a "poor man's" core barrel which consisted of a piece of pipe with teeth cut with a torch as the cutting face. Contrast this with the well-machined piece of equipment that comprises the present-day core barrel. Not many years ago the reason for coring was primarily to determine whether "the formation was sand or shale," and if sand, whether it was oil sand or water sand.

Mechanical Formation Testing

By D. T. HOENSHELL, Petroleum Engineer
Kettleman North Dome Association

Organized tester service for both casing shoe and formation tests was started in California oil fields during 1930, and prior to that time individual companies and operators had used packers as testers in one way or another in attempts to determine fluid contents of formations in both cased and uncased holes.

Testers are used in oil field development to: one, determine the success or failure of the water shutoff on the casing string; two, to determine the fluid content of an isolated sand either below the casing shoe or at considerable distance below it; three, to provide rapid testing of isolated perforated intervals in cemented liners or oil strings; four, to determine formation pres-

sures prior to setting an oil string or liner; five, to clean perforations; six, for formation breakdown in recementing of casing.

Economics of Casing Programs

By C. W. FROOME and H. P. WICKERSHAM, Mechanical Engineers
Union Oil Company

The oil business has long passed the wild, reckless gambling stage and is settled to an industry in which costs are increasingly important to profitable operation. Price structures, mutual, state and federal regulations increase the worries. The oil operator finds it a problem to finish a well with safety and leave it in condition to produce to full possibilities. During the past eras of good business, a multiplicity of sizes have been developed, some by requirement, some by mere preference. The many sizes naturally reflected a high price due to higher manufacturing, stocking and handling costs. The manufacturers have long recognized the fact, but have not, until recently, made any great effort to suggest to the operators that any price reduction would be obtained by using any particular group of sizes. To take full advantage of possible weight and cost savings, the user must be certain that the materials he is using are of material and workmanship capable of performing their calculated duty.

Multiple Zone Wells and New Casing and Cementing Practices at Wilmington

By C. JAMES DEAN, Field Engineer
General Petroleum Corporation

A multiple zone well is one which does the work of two or more individual zone wells, at least during the flowing state of its life. Although the practice of multiple zone completions did not originate in the Wilmington field, it has been given the greatest application here. This ingenious completion method must be granted a trial as a stepping stone on the ascending path of good oil field practice. Data of multiple zone practice are too few to permit an accurate appraisal of true worth. Today it must be placed as a stone on a by-path to form a short cut to the solution of particular problems.

Economics of Production Methods

By C. A. YEATMAN
Shell Oil Company

The discovery in 1936 of the Ten Section field realized for Shell Oil Company the favored position of being the sole operator of an oil field of major proportions. Since it was anticipated that the natural flow life of the wells completed there would be considerably more than two years, the policy of moving derricks as drilling operations progressed was inaugurated in the field as its inception. The even topography of the area has frequently permitted the derricks to be skidded in the erected position from one well location to another. Physical circumstances required the Christmas tree installations to be capable of operating at a pressure of 3000 pounds per square inch. However, the Christmas trees are so designed that should curtailment circumstances change, or should a well prove itself to be incapable of developing a flow rate of 2000 barrels per day through the tubing alone, adjunctive fittings may be applied to the casing outlets which will thereby connect them with the flow line and will permit simultaneous casing and tubing flow.

By reason of economy the policy of removing derricks from wells upon completion of drilling operations has been adopted and it is assumed that derricks lighter in construction than those required for drilling operations, but sufficiently strong for production operations, would ultimately be installed at the producing wells. However, the use of portable masts and derricks has, in the past several years, enjoyed popular usage in connection with the production servicing operations performed on the shallower wells. Such masts have been constructed and are being used to hoist loads which closely approach that of the 8000 feet of tubing which consistently forms a part of the production equipment found in all wells at Ten Section field. It does not appear unreasonable to predict that production servicing operations in Ten Section field may be largely effected through the use of portable mast equipment.

Stripper owners

[*Continued from page 58*]

isiana Gulf Coast, were producing far too much oil per well, and at the expense of the small producer. He urged enforcement of efforts that would stop discriminatory production practices from large wells.

W. R. Boyd, executive vice president of American Petroleum Institute, addressed the meeting during the luncheon session.

National Stripper Well Association officers elected for the ensuing year were:

President, Jake Hamon, Dallas; executive vice president, H. B. Fell, Ardmore, Oklahoma; secretary-treasurer Howard J. Whitehill, Tulsa; vice president for California, George Terry, Los Angeles; vice president for Kansas, Arthur Denman, Sedan; vice president for Pennsylvania, W. J. Brundred, Oil City; vice president for Illinois, William Bell, Robinson; vice president for New Mexico, Harry Leonard, Roswell; vice president for Michigan, A. J. Weideman, Mount Pleasant; vice president for Texas, C. J. Tucker, Wichita Falls; vice president for Oklahoma, Wirt Franklin, Ardmore.

W. W. Warner, president of Oklahoma Stripper Well Association, presided at the meeting.

Oklahoma stripper owners organize

Organization of the Oklahoma Stripper Well Association was announced October 19, following the meeting of the national organization. W. A. Goforth, Tulsa, president of Valley Osage Oil Company was elected president; Charles F. Clowe, Ardmore, vice president; John H. Rebold, Okmulgee, vice president; Carl Haun, Blackwell, vice president; and Howard Whitehill, Tulsa, treasurer. The number of stripper wells in Oklahoma was placed at 50,000.

Oil in Courts

Court of Appeals asks Judge Stone to explain why he dismissed defendants in trust trial after trial.

Judge must answer for dismissing trust defendants

Federal Judge Patrick T. Stone is to answer a mandamus action in the United States Circuit Court of Appeals at Chicago October 24 explaining why he dismissed one major oil company and 10 oil company officials tried at Madison, Wisconsin, last winter after a trial jury found them guilty of conspiracy to violate the Sherman anti-trust law.

The action was brought early this month by government attorneys in an attempt to gain retrial of the defendants. The Madison jurist reserved rulings on defense motions to dismiss charges pending action on the case by the jury, explaining at the time that extended study would have to be made before he could properly rule on the dismissal motions and that he did not wish to keep the jury sequestered additional weeks.

Judge Stone later refused a government request to rescind the order by which he freed the defendants on July 19, and rebuked government attorneys for not raising the contention that he was without power to reserve rulings on the dismissal motions when he announced his intention as he gave the case to the jury in January.

In the same order of July 19, the Madison court granted motions for a new trial filed on behalf of 3 companies and 15 individuals, which is not being challenged, and sustained guilty verdicts returned against 12 companies and 5 individuals, fining them a total of $65,000. An appeal from the latter part of the order has been taken by defense counsel and is also pending before the Chicago appeals court.

Texas security law constitutionality upheld

Constitutionality of the Texas securities law was sustained last week by the Court of Criminal Appeals at Austin. Involved in this particular case was a dealer in oil and gas, Roger J. Atwood, and the court affirmed a fine of $500, which had been provided in a lower court judgment.

Atwood had contended that the statute violated his constitutional rights in that it prevented him from disposing of his own property. The Court in its ruling pointed out that documents evidencing an interest in an oil and gas lease, or in the oil and gas under a lease, are in fact securities, and dealers must register.

Mid-Continent expects large attendance at Texas meet

The largest group of oil men ever to attend a Texas oil meeting is expected at San Antonio October 27 and 28 for the Texas Mid-Continent Oil and Gas Association's nineteenth annual convention.

The convention program, just completed Saturday, will bring a number of outstanding speakers before the business sessions. Included are Governor-Nominate W. Lee O'Daniel, State Comptroller George H. Sheppard, Dr. Gus W. Dyer, nationally-known economist of Nashville, County Judge-Nominate Merritt H. Gibson of Gregg County, Senator J. Franklin Spears of San Antonio and Charles P. McGaha of Wichita Falls, association president. The entertainment, the most elaborate ever planned for the Mid-Continent, includes a golf tournament, dinner dance, directors' dinner, reception honoring O'Daniel and a number of individual parties given by local oil men.

Several hundred oil men's wives also are expected to come to San Antonio for the meeting. Their entertainment will include a tour of the old Spanish missions and other beauty spots, a tea with strolling Mexican musicians at the picturesque Governor's Palace, a golf tournament so there will be no golf widows and a host of individual smaller parties.

Opening at 9 a.m. Thursday, October 27, with registration at the Plaza Hotel, convention headquarters, the convention will get under way at 9:45 a.m. with President McGaha in charge. After the invocation by Archbishop Drossaerts, Mayor C. K. Quin will welcome the visitors and W. H. Francis of Dallas will respond. The annual president's address will be delivered by McGaha, who will give a study of the place of oil in the economic life of Texas, presenting many new facts. Reports of the various committees will follow, with Paul W. Pitzer of Breckenridge reporting for the theft prevention committee; Raymond Myers of Dallas, social security and Jake L. Hamon of Dallas, membership.

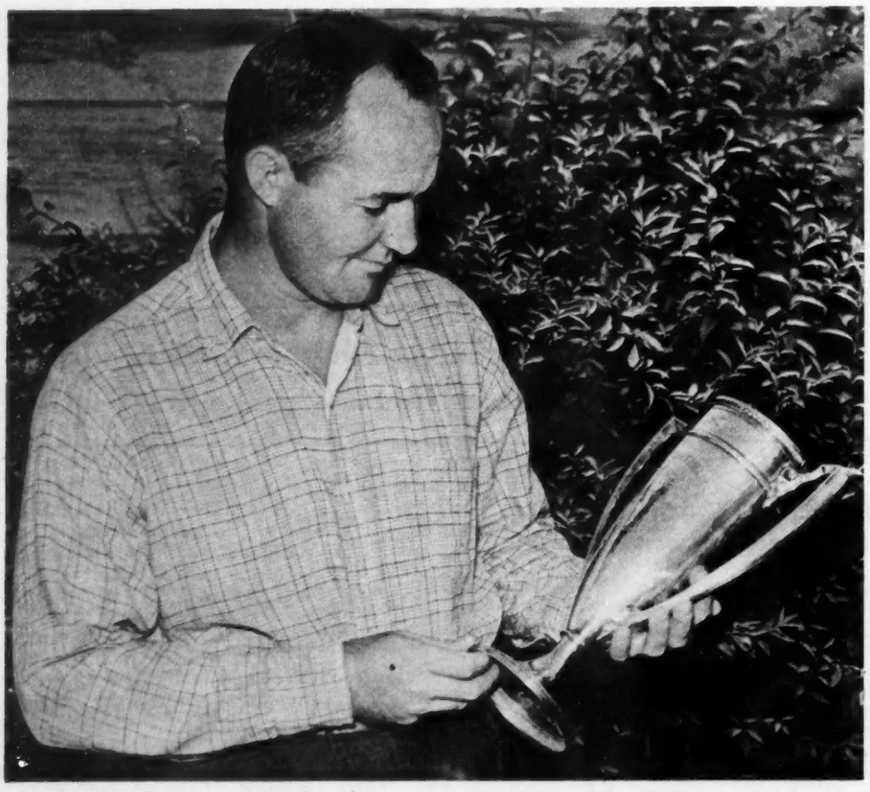
Comptroller Sheppard will close the morning session with a talk on the gross production tax and other State levies paid by the Texas oil industry.

With Merle Blair of Wichita Falls presiding, the Thursday afternoon session will open with a report of the nominating committee headed by E. L. Smith of Dallas, after which Harold G. Neely of Fort Worth will speak for the tax committee and Guy L. Tate of Dallas for the form simplification committee. After the future governor's address, a reception honoring him will be held by the local oil men for the visiting operators.

The directors will meet at dinner at 6:30 o'clock Thursday night.

McDonald Meachum of Houston will preside when the Friday morning session opens at 9:30 o'clock. Two outstanding members of the oil industry will be given distinguished service awards, with Harry C. Wiess of Humble Oil & Refining Company at Houston making the presentation to the independent and J. C. Hunter, Abilene independent, presenting the award to the major company official chosen. The recipients will not be made known until the awards are made.

Dr. Gus W. Dyer of Vanderbilt University, famed speaker on business topics, will be the principal speaker of the Friday morning session. Resolutions will be presented by John J. O'Hern of Laredo, while an address by Judge Gibson on oil ad valorem taxes and their effect upon the administration of local subdivisions of government will close the business meetings.



E. D. Herron, Jr., of Frick-Reid Supply Corporation, Houston, is giving the the W. B. Hamilton golf trophy a last look before the Texas Mid-Continent Oil and Gas Association convention October 27 and 28 in San Antonio. If plans of any of 25 other Texas oil centers go through, Houston will not see the cup again next year.

Already more than 250 have entered for the 1938 play, expected to be the hottest in the association's history. Some of the more earnest entrants have been pointing toward this tournament ever since they were nosed out last year at Dallas. They are particularly anxious to take it away from Houston which has held it for the past two years, with Frank S. Carothers the winner in 1936. W. D. Holcombe, ex-mayor of San Angelo, won it in 1929, just before the tournaments were suspended, John H. Tucker in 1928, R. H. Williams of Dallas in 1927 and Frank Cullinan of Houston in 1926.

Arrangements for the 1938 tournament, to climax the second day, Friday, October 28 of the annual Mid-Continent meeting, are being made by L. D. Ormsby of San Antonio. Events include the 18-hole Hamilton trophy handicap and the 10-man team match. Awards comprise first, second and third low net; first, second and third low gross; first high gross (booby) and first and second low net each team.

Plans for a tourney for the women attending also are being made, with Mrs. Francis M. Frasher in charge.

Magnolia enlarge Illinois system

Magnolia Petroleum Company has authorized the construction of a crude gathering system in the Lake Centralia field, near Salem, Marion County, to support its pending major drilling campaign in the area with an adequate market outlet. The unit, which will include 4- and 6-inch lateral lines, and about 10 miles of 8-inch line, will connect with the Illinois Pipe Line Company's trunk line. The oil will be handled by the latter on a common carrier basis for consignment to Socony-Vacuum Oil Company's refineries.

Earlier reports indicated that Magnolia Petroleum Company would construct a trunk line from the Lake Centralia field to East St. Louis, Ill., where the Socony-Vacuum Oil Company operates a refinery on Oklahoma crude supplied by the Magnolia Petroleum Company.

Owensboro changes name

The name of Standard Oil Company of Ohio's pipe line subsidiary was changed last week from Owensboro Corporation to Sohio Corporation. Officials said there had been no change in ownership or management.

Contract awarded for Rocky Mountain line

S. D. Bechtel Company, San Francisco contractors, have been awarded the contract for a 53-mile 18-inch natural gas pipe line from Bigelow Hill, Wyoming, to Coalville, Utah, by Mountain Fuel Supply Company. The project will cost an estimated $1,250,000.

WEEK'S DRILLING HIGHLIGHTS

Michigan

Bloomingdale townsite with 37 drilling operations probably is the busiest spot not only in Michigan but in the world. Although lease prices and demands are exorbitant and prospects of oil recovery paying even the drilling cost, the rush is such that it is expected that 100 wells will be drilled on 80 acres of town lots. Other parts of the state are slowing down.

Illinois

Lake Centralia in Marion County was extended over two miles to increase the area to 7 miles long by 3 wide, while Fayette County was given a length of 19 miles when a failure stopped the march south.

Kentucky-Indiana

Several near completions in the McClosky area of Kentucky indicate further spreading of production. Major operators are moving in to drill on large blocks assembled near Evansville, Indiana.

Pennsylvania

An oldster of 50 years, the Harvey field of Greene County, Pennsylvania, has a completion flowing 250 barrels per day, making it one of the largest wells in the whole area.

New Mexico

Field work in Lea County, New Mexico, continues well above the level of last summer, a situation that is encouraged as extensions of the Vacuum field requires progressive offsets.

Arkansas

The second failure for the Schuler field defines production west. Otherwise there was little doing in Arkansas.

Comparison of Permits Granted for New Wells

STATE	Week Ending Oct. 22	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	3	10	198	207	240
California	16	58	998	1,284	1,584
Louisiana	48	100	1,055	1,029	1,227
Kansas	28	86	1,286	2,317	2,663
Michigan	31	55	746	815	958
Oklahoma	51	140	1,698	2,319	2,711
Texas	136	496	10,576	14,812	17,238
Total	313	945	16,557	22,783	26,621

North Texas

Deep lime in the Panther area of north central Archer County is more attractive as a source of high-gravity oil; earlier wells were erratic. K-M-A had only 8 new starts during the week and operators there face difficulties disposing of their oil when production goes back to six days a week.

West Texas

East extension of the Wasson field will attract additional drilling as the outpost had 179 feet of soft saturated lime and is rated among the larger natural flowing producers.

North Louisiana

Logging 50 feet of broken formation at 2710-2760 feet, a wildcat is in process of completion to establish a new pool in DeSoto Parish, Louisiana. A second failure seems certain in the Shreveport area, although prospecting that has followed this strike is so widespread that this might well be considered just another wildcat.

Southwest Texas

A new wildcatting play is getting under way in Nueces County. In the Valley a test has gone for a region record by passing 9000 feet, after logging a show 50 feet higher.

Gulf Coast

Center of interest is League City in Galveston County where wild rumors of lease trades at high stakes are rife while the wildcat which proposes to be an oil well is yet to be completed. In Chambers County a wildcat has a small flow of distillate. On the Louisiana side the usual extensions and new prospects continue normal with a gas blowout at South Houma of most interest.

Oklahoma

St. Louis in the Greater Seminole is attracting drilling for a second crop as wells are being drilled to recover oil passed up or disregarded in the rush that was Seminole. In the Chickasha gas field, a test for oil has become a wildcat by going below 4500 feet where strata are virgin for the area.

Rocky Mountains

Two important wildcats started in the Lance Creek area, Niobrara County, eastern Wyoming this week, while The Texas Company took over operation of the Frontier Petroleum Corporation's deep test of the Dry Piney structures, Sublette County, which two weeks ago reported a 50 million cubic foot gas blowout in the first Frontier sand.

Summary of Wells Completed in the United States Week Ending October 22, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	.....	.....	.....	.....	.....	2	1
Arkansas	2	1	.....	1	720	182	99
California	23	20	.....	3	7,475	1,034	1,223
Colorado	.....	.....	.....	.....	.....	6	16
Florida	.....	.....	.....	.....	.....	.....	1
Georgia	.....	.....	.....	.....	.....	1	.....
Illinois	47	40	.....	7	8,023	1,192	225
Indiana	28	10	10	8	236	124	105
Kansas	34	25	.....	9	33,182	1,393	2,190
Kentucky	25	11	3	11	825	656	380
Louisiana	13	10	2	1	3,725	894	796
Michigan	23	11	.....	12	5,811	776	788
Mississippi	2	.....	.....	2	.....	14	11
Montana	5	4	1	.....	434	65	169
Nebraska	.....	.....	.....	.....	.....	1	.....
New Mexico	12	9	.....	3	3,572	437	579
New York	*10	10	.....	.....	29	*542	*1,042
North Dakota	.....	.....	.....	.....	.....	1	.....
Ohio	9	5	4	.....	34	786	1,229
Oklahoma	35	23	2	10	3,989	1,789	2,490
Pennsylvania	*32	27	3	2	37	*1,721	*2,467
Tennessee	.....	.....	.....	.....	.....	2	.....
Texas	211	158	11	42	160,945	10,397	12,463
Utah	.....	.....	.....	.....	.....	3	.....
West Virginia	14	2	10	2	6	571	761
Wyoming	3	1	.....	2	50	88	89
Total this week	528	367	46	115	229,093	22,677	27,124
Total last week	483	330	28	125	294,643	.....	.....
Total this year	22,677	15,703	1,612	5,362	14,568,074	.....	.....

* Includes water-intake and pressure wells.

Oklahoma Fields

Going back for production passed up in St. Louis area. Test is wildcatting for oil in Chickasha gas field.

Tulsa.—Activity in Oklahoma during the past week was largely limited to field work with only a few outstanding wells focusing attention in certain areas. The St. Louis area of Seminole and Pottawatomie counties is witnessing a continuance of drilling activity to Wilcox sand and more shallow pays that were passed up or disregarded in the days of early development. Alma Oil Company's Canfield 1, NW SE NW 33-7n-5e, an extension try southeast of general activity, made a producer when it pumped 450 barrels of oil and 450 barrels of water from Wilcox sand from 4252 feet. Nineteen wells have been completed in the district to date, each a producer through the later drilling campaign. Eight tests are scheduled for starting.

In the same district, Hall Briscoe, Inc.'s Merkle 1, NW NW SE 32-8n-5e, topped Wilcox at 4368 feet and drilled into the second Wilcox sand at 4385 feet. An early test is expected with hole at 4390 feet in the pay. Upper shows were encountered in sands and in a dolomite section at 4363 feet which was treated with 3000 gallons of acid.

Gulf Oil Corporation and Carter Oil Company's Lester 1, C NW NW 35-2s-3w, in the deep Fox area of Carter County, is testing at 8137 feet in lime. The well failed to make a producer on initial tests and the operator is to clean hole by gas pressure in an attempt to develop a flow. In case this is unsuccessful it is probable that the section will be reacidized.

The most important test drilling in Caddo County is The Texas Company's Smith 1, C NE NW 2-5n-12w on structural high in the western section of the county. After reaching 2556 feet in Viola lime the well cemented casing and remained inactive. Encouraging upper shows were encountered and it is indicated a commercial well will result.

Deep Chickasha Test

Carter Oil Company's Smith 1, C SE SW 26-5n-8w, the projected deep test located in the heart of Chickasha gas gas field has reached 4500 feet and is drilling and coring ahead. Recovery of cores has shown slight oil with gas. At about this depth the well becomes a wildcat as there is no prior knowledge of deeper strata by drilled holes. This is considered Oklahoma's outstanding test and will be followed with interest.

Two recent completions have added a relatively small area to Fitts pool of Pontotoc County. The first well, a one-quarter mile southeast extension to production, was drilled by Magnolia Petroleum Company on a location within the structure but southeast of major development. The last completion is Patsy Oil Company's Newell 1, NW SE 26-2-7e, which went to 4040 feet in Hunton lime, being a south offset to the Magnolia well. On test it made a potential of 3784 barrels for 24 hours, producing 204 barrels, 189, 154 and 130 barrels during the regular 4-hour testing period. Flow was accompanied by 5,000,000 cubic feet of gas with no water showing.

As both locations are on structure, development of the minor area between the tests and the older section of the field will follow. Newell 1 cannot indicate a south trend as the well cut the fault limiting the field in this direction, and it is doubtful if more than one location can be made to the south of this well with the hope of cutting the fault high enough to go into the Hunton or lower strata to make a producer.

Olson Oil Company, which had one of the most difficult gas wells ever to be controlled in the Mid-Continent in Rigney 1, NE NE NW 12-5n-9w, in the Cement pool of Caddo County, has plugged. The rig is being skidded 120 feet south where a new test will immediately be started. Rigney 1 reached 6532 feet before the heavy gas broke in from an unknown source.

Contrary to first indications E. J. Shaffer's Onstott 1, SE SW NE 17-28-1w, failed to make a producer in the Wilcox sand and limits development of South Braman pool, Kay County to the northwest. The pay was topped at 3632 feet and penetrated to 3668 feet. On first test the well showed for oil but subsequent testing returned only 700 feet of salt water and mud into the hole. The operator is to plug back in an attempt to save the first showing. This well is one half mile northwest of recent development in the new Braman area opened last spring by Helmerich-Payne in Section 16, and is between the old Braman pool of the new discovery. In the same area Ohio Oil Company is at 3664½ feet in Wilbur 1, NW NE NW 21-28-1w, a south offset to the discovery. Plugs are to be drilled for an early completion. One half mile west of this spot is Shaffer's McKee 1, NE NE NW 29-28-1w, at present shut down at 2500 feet after having a show of oil in Stalnaker sand at 2401 to 2415 feet.

The sixteenth producer in Ramsey pool of west Payne County, Mid-Continent Petroleum Corporation et al's Columbia 5, SW NE SW 18-18n-2e, has been completed for a rating of 5713 barrels daily. This established a potential of slightly less than 170,000 barrels daily for the field, based upon initial production tests. There are no other tests active in the pool at this time, although Mid-Continent Petroleum Corporation et al have driven the seventeenth stake in the NW NE SW 18-18-2e. The well will be Grav 2, east of Gray 1 which came in for 7518 barrels initial.

A flurry of excitement resulted from a Pitkin lime well in the Seltzer pool area of Wagoner County, Eastern Oklahoma, when Heiden et al's test, CEL NW NW 30-17n-18e flowed a few heads from 760 feet in the pay. Tankage is being erected and the well is being cased for production tests, with a 50-barrel well indicated. Most of the development in this area is to the Bartlesville, with some production northwest of Wagoner from the Wilcox sand at a comparatively shallow depth. The first break in the Mississippi lime has been found productive in a number of wells.

Rogers Oil Company's Martha 1, NE NW NE 1-7n-7e, on the edge of

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Beckham—		
Westoak Gasoline Co., Alice Thompson 1, c se se 3-9n-25w	¶24	3556
Caddo—		
Ohio Oil Co., Lackey 6, sec nw 11-5n-9w	1795	3366
Carter—		
Shell Pet. Corp., Ray Johnson 23, sw ne se sw 4-4s-3w	14	1061
Comanche—		
Rheinhardt & Donovan, Rowells 1, ne nw ne se 21-2n-10w	3	1084
Creek—		
Whitfield & Bailey, Harjo 1, nw sw sw 26-14n-10e	175	3264
Bruin Oil Co., Morton 2B, nw ne sw 27-14n-10e	112	3317
Sinclair Prairie Oil Co., Oats 9, nw se nw ne 14-19n-9e	12	1230
Grady—		
McCasland, Carter-Kerns 1, sw nw ne se 21-3n-5w	*	2698
Lincoln—		
OK-Tex Drlg. Co., Black 1, sec 31-16n-6e	*	3903
Muskogee—		
Clonts, Jennings 2, nwc ne 8-13n-19e	*	1507
Metzger & Foltz, Henry 1A, se se nw ne 11-14n-18e	*	1165
J. R. Parks, Hilderbrand 4, se se nw se 17-14n-19e	¶5	577
Noble—		
Superior Oil Co., Faw-Faw 1, sw ne se 21-22n-1e	*	3397
Midco Oil Co., Yost 2A, sw nw ne 22-23n-2w	85	4315
Okmulgee—		
J. E. Dow, Miller 8, 200 ft e of c n½ se 4-14n-14e	10	1586
Commercial Drlg. Co., Briscoe 1, sw nw ne se 26-15n-12e	*	1637
Osage—		
Harland Oil Co., 23, ne nec 26-24n-11e	4	1728
Norbla Oil Co. et al, 2, se nw sw ne 3-26n-11e	*	1640
Pawnee—		
M. P. Thomas, Zackfoose 2, sw sw ne ne 23-20n-9e	48	1225
Sinclair Prairie Oil Co., Burger "B" 13, sw ne ne se 17-21n-8e	122	2162
Payne—		
Deep Rock Oil Co., Laughlin 1, se se ne ne 2-18n-5e (pb 3533 ft)	10	3549
Pontotoc—		
Amerada Pet. Corp., Norris 1, nw se se 26-2n-6e (opb 4273 ft)	400	4461
Moore, Ingram 1, nw se ne 22-2n-7e (pb 1279 ft)	11	3880
Simpson-Roadhouse, Wooley 4B, 100 ft n sw ne se 28-2n-7e (pb 3020 ft)	79	3476
Pierce et al, Kroeger 1, se ne sw 30-5n-7e (pb 1164 ft)	*	2380
Osborn et al, Chism 1, sw ne se 34-5n-7e	*	22
Pottawatomie—		
Denver P. & R., Troutman 1A, sw ne nw 1-6n-4e	150	4096
H. Shaffer, Shrader 1, ne se ne 6-6n-5e	265	4208
Elbar Oil Co., Kite 1, swc se 11-7n-4e	67	3130
Deep Rock Oil Co., Tolen 2, nw sw sw 30-7n-5e	10	4504
Tolen 4, sec sw 30-7n-5e	127	4232
G. L. Pace, Riley 1, nec se 2-9n-3e	*	5370
Seminole—		
Beaver et al, Hall 1, nec 7-6n-8e (pb 2943 ft)	15	2973
Rogers & Rogers, McKinney 1, sw ne sw 25-7n-5e (pb 2962 ft)	4	2983
Francis O&G Co., Lewis 1, nw se se 32-7n-6e	75	2854
Stephens—		
G. L. Pace, Allen 21, cwl nw se ne 3-2s-8w	400	2204

*Failures; †Junked; ¶Million cu. ft. gas

the old Wewoka development in Seminole County is making a producer in Booch sand topped at 3210 and drilled to 3237½ feet. One year ago there was a spurge of minor activity in the area with well going to both the Hunton lime and to the Booch sand. Most of the drilling was centered in eight north and eight east. The wells do not come in for large initials but are of long life.

In the Oklahoma Panhandle there are 10 tests seeking the dolomite gas section to build up a reserve for a natural gas pipe line proposed to supply cities in the north central states. Production in the area is from laminated dolomite and lime above 4000 feet. The area is a continuation of the Hugoton, Kansas and the Texas Panhandle gas field.

KANSAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Continental & Sinclair, Pincher 1, ne se se nw 23-16s-11w	*	3427
Cities Service Oil Co., Bauman 1, nwc sw 6-16s-13w	1190	3322
I. T. I. O. Co., Hoffman "B" 2, swc nw 7-16s-13w	1496	3361
Shell Pet. Corp., Stettinger 4, csl se nw se 1-16s-14w	261	3363
Lario & Atlantic O&R Co., Bryant 3, swc se 23-20s-11w	1162	3293
Butler—		
Rex & Morris, Gunther "B" 2, nec 29-26s-7e	30	2817
National Refg. Co., Pray 2, nw sw sw 31-27s-3e	220	3118
Fred Phillips et al, Hanshaw 1, nec se 32-27s-3e	*	3150
Cowley—		
C. E. Roth, Houston 1, sec 10-13s-4e	*	3450
Texas Co., Ross 1, sw swc se 21-31s-4e	2304	3288
Barnsdall Oil Co., Elliott 1, nec 5-31s-5e	*	3329
Ellis—		
Darby Pet. Corp., Jorgensen 3, nw sw sw 7-11s-17w	2000	3334
Dickey Oil Co., Henderson 1, swc ne 7-11s-17w	2500	3430
Cities Service Oil Co., Hall "A" 3, sw se sw 14-11s-17w	530	3367
Shell Pet. Corp., Rumsey 13, nec nw 23-11s-17w	3391	3380
Derby Oil Co., Sander 5, se sw ne 3-14s-17w	*	3682
Ellsworth—		
Continental Oil Co. et al, Baker 1, nw sec 21-17s-8w	1812	3249
Cities Service Oil Co. et al, Mollhagen 1, sw nec se 30-17s-9w	851	3223
Greenwood—		
Greenway Oil Co., Culter 1, sw sw nw se 32-25s-11e	*	760
McPherson—		
Sprengrose Drlg. Co., Tull 1, se nw sw 13-19s-3w (pb 2365 ft)	*	3434
Reno—		
Gulf Oil Corp., Meyers 8, c sw nw 3-24s-4w (pb 3367 ft)	960	3395
Rice—		
Continental Oil Co. et al, Bolton 3, se nec nw 31-18s-7w	2239	3200
Wood 6, sw se se 12-18s-8w	2631	3320
Shell Pet. Corp., Zajic 8, sw ne ne 13-18s-8w	2630	3218
Tatlock, Burchart 1, swc nw 18-20s-10w	310	3295
Sunflower Oil Co., Stange 5, ne se nw 16-21s-7w	47	3395
Russell—		
Cities Service Oil Co., Rogg "B" 1, cwl sw se se 20-14s-13w	1287	3209
Texon Drlg. Co., Letsch 6, nw ne sw 26-14s-13w	1317	2870
Wolf Creek Oil Co., Rouback "A" 2, se sw ne 15-14s-15w	510	3219
Saline—		
Sullivan & Sidwell, Erickson 1, nec 28-16s-3w	*	1800
Sedgwick—		
E. B. Shawver, Hass 1, swc se 4-27s-2e	*	3305
Stafford—		
J. E. Crosbie, Inc., Johnson 3, sw ne sw 13-24s-11w	1980	3805
Atlantic O&R Co. et al, Wise 1, c n½ s½ nw nw 13-24s-14w (pb 4131 ft)	1494	4196
Woodson—		
Nye & McCormick, Life Ins. Co. 1, nw ne sw sw 18-24s-14e	30	1631

*Failures; †Junked; ¶Million cu. ft. gas.

Kansas Field Developments

Three pools get production extensions during week. Wildcatting in state limited and of slight interest.

Wichita.—Three extensions to pools in Kansas featured the developments the past week. Atlantic Refining Company and Skelly Oil Company's Luders 1, NW SW. NE 11-27-13w, extended Iuka production in Pratt County. This well makes the third test to produce from a sandy lime zone in Simpson formation. Pay was topped at 4311½ feet and the hole drilled to 4319 where it was shot with 20 quarts and treated with acid. On potential test the well swabbed and flowed 795 barrels.

Lario Oil & Gas Company's Reiser 1, SE NE NW 23-20-11w, south of Ellenwood pool, southeast Barton County, appears to be a minor extension to that area. Drilled to 3307 feet in Arbuckle, the test showed for less than 10 barrels per hour on swab, and was acidized. Following treatment it swabbed at the rate of 13 barrels per hour and although it can probably be completed commercially at this rate it will be retreated as the first acid volume was only 750 gallons.

In Stafford County Republic Natural Gas Company's Hart 1, NW SW SE 20-22-11w, northeast of the major development in Richardson pool, has been completed and given a potential of 242 barrels after treatment with acid. Bottom is at 3629 feet in Arbuckle lime.

With wildcatting more or less limited to short-term leases or to particularly favorable geologic features, there is no concerted play in any area. Few wells off the established trends are worthy of special interest although recent stakes will spread the play out a little. Among the wildcat tests, Continental Oil Company's Gray 1, SW SE SE 26-17-8w, near Edwards pool in south Ellsworth County, is an abandonment. This location is on the Saline Basin side of Central Kansas Uplift. Viola lime was topped at 3190 feet and at 3295 feet the hole went into Arbuckle. At 3310 feet, total depth, the well had shown for a little dead oil.

Near Perth in Sumner County, south Kansas, Vickers Oil Company picked up a fair show in Blue 1, CWL NW NW 1-33-2w. Mississippi was topped at 3857 feet and 7-inch set at 3861. After going in with cable equipment hole was drilled to 3862 and later to 3895 feet, picking up a show that failed to materialize. At present the test is shut down at 3950 feet.

East of Heizer production in Barton County, J. A. Rankin's H. Essmiller 1, NE SW SE 16-19-14w, had top of Conglomerate at 3455 feet with a slight show of oil and gas. The latter increased as the hole was carried on down and at 3520 was estimated at 6,000,000 cubic feet. It is drilling deeper to test the Arbuckle.

In the heavily drilled section of Russell County, Stanolind Oil & Gas Company's Krug 1, NE NE NE 27-14-14, set 7-inch in Lansing at 2965 feet, drilled to 2988 and after treating with 5000 gallons swabbed and flowed 300 barrels in four hours. There was good gas with the oil and no water. For the area, the well is better than average.

More attention than at any time in the past few years is being given the possibilities presented by the eastern edge of the Saline Basin flanking the Nemaha Ridge. In addition to this there is interest manifest in the section east of the ridge, between it and the Chautauqua arch. Some shooting was done within the past year throughout the area and it is understood that a number of favorable highs have been located. Scattered tests have been drilled at various points in the sector in the past, none of which has proven deeper production. However, it appears evident that zones producing south in Kansas along the Ridge may be expected at more northerly points. Moreover, it is not believed that the early tests of the region were very well located geologically, and hence should not be taken as indicative.

A number of interests are looking into the possibilities of the sector and leasing is particularly active by one operator with protection being acquired by other firms. This play is partly due to the Illinois development and to the fact that conditions in northeast Kansas are believed similar to those of the Illinois Basin. Previous attempts to extend the Nemaha Ridge production north from Morris County have failed. Some production has been obtained in eastern Clay County at about 2000 feet but was not of encouraging commercial value. If the interest trend continues locations will be announced to test the more favorable areas.

Industry's ill cannot be cured by politics

Speaking at Larned, Kansas, last week, Innis D. Harris, Jr., general counsel for the Kansas Corporation Commission, declared there are no "political ways" of solving the economic ills of the oil industry and that solution of the industry's problems "depends upon sound economic laws."

Describing efforts to capture a larger market for Kansas crude, Harris said there is no foundation in charges that the corporation commission is "selling Kansas down the river" or "playing politics in the oil business."

"In the past 10 years, Oklahoma's market has been cut in half while Kansas' market has trebled," he said. "In the past 10 years, Oklahoma's market has been as high as 800,000 barrels a day, and this year as low as 435,000 barrels per day, while Kansas' market has been as low as 30,000 barrels per day and now is over 150,000 barrels."

He added that the Kansas corporation commission has allowed crude oil purchasers to take more oil than they can use, with the result that on May 1, 1938, the accumulated allowable exceeded demand by a million barrels.

Colombian production

Colombia's crude oil production in July, 1938, totaled 1,826,848 barrels, while crude petroleum refined in the country totaled 179,679 barrels.

California Fields

Spellacy anticline in Valley is attracting interest.

Ten Sections production extended location northwest.

Los Angeles.—Speculation is heard about the possibilities of developing commercial production at the southeast end of the Spellacy anticline, on the floor of San Joaquin Valley, as this anticline has produced Miocene production in "Little Signal Hill" back of Taft.

Julius Freid's No. 1 Section 34-32-24, in this area, is making progress below 3600 feet in sand and shale. Freid owns a large part of the land in the Lakeview area, while Standard Oil Company owns the sections to the west and north. Murvale Oil Company holds considerable acreage to the northwest.

Interest is being shown in several other tests in San Joaquin Valley. Two of these belong to California Lands, Inc. One is located at Lost Hills and the other at Buttonwillow. The Lost Hills test, Ocidental 1, Section 1-29-24, has had a little oil sand in the Temblor but due to its thinning out, no attempt was made to bring the project in and it is drilling below 6800 feet. Geologists say this undertaking is searching for an accumulation against a fault instead of an extension to Lost Hills. The Buttonwillow project is down to approximately 5300 feet and casing is cemented to protect the hole against caving shale. Shortly after the old Milham Exploration Company (now Seaboard Oil Company) discovered Kettleman Hills North Dome to be productive, it drilled a series of gas wells at Buttonwillow and made several tries to find oil, but failed to tap sufficient oil sand to bring in a new field. Buttonwillow gas has gone to millions of consumers in recent years, and scouts believe that ultimately oil in commercial quantities will be found there. Gas showings were encountered at 4700 feet in California Lands' Buttonwillow test.

Oil operators are watching progress in the old Wheeler Ridge field, southwest of Bakersfield now that showings have been found in Richfield Oil Corporation's KCL 1 wildcat in Section 28-11-20 from 7750 to 7777 feet. Oil sand showings were cored that indicate the presence of high-gravity crude, and the hole is being put into condition preparatory to making a formation test.

Oil sand continues to be cored in Standard Oil Company's KCL 8-B-1, Section 17-27-24, south of the discovery well in the Wasco field. Seven-inch casing is cemented at 13,000 feet with top of the oil sand around 13,024 feet. Standard's Mushrush 1, west of the first well at Wasco, cleaned up a fishing job during the past week and is coring shale below 12,900 feet. Continental Oil Company's KCL A-3-8, deep test due north of the discovery well, plugged back to 13,221 feet where it produced salt water and plans are to plug back still higher to make additional tests.

Shell Oil Company extended the productive limits of Ten Section field one location northwest with completion of KCL 83-25, which had an initial flow of 2500 barrels of 34.9-gravity oil with 2,170,000 cubic feet of gas from 8220 feet. The company's KCL B-47-20 is below 8200 feet and KCL A-79-29 is ready to spud.

Superior Oil Company added another good well to its list in the Rio Bravo field, Kern County, when Ruhl 2 made 1100 barrels from 11,523 feet. Union Oil Company's KCL 5-34 is slated for early completion, being below 11,200 feet. George F. Getty, Inc., has drilled to 10,200 feet in Ramsey B-3 in record time.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Dominguez—		
Shell, Reyes 95	36	9180
Long Beach—		
Texas Co., Foster 2-3	350	5000
Montebello—		
Union, Howard & Smith 3	1586	6385
Paul Howard 1	219	6244
Torrance Extension—		
California Star, Anderson Comm. 1	350	5290
Macson Oil Co., No. 1589-1-1	300	5256
Ring Oil Co., Ring-Hawkins 2	350	5270
Ring-Hawkins 3	465	5265
Torrance—		
A & T Oil Co., A & T Fee 1	140	5122
Lancia Oil Co., No. 1	225	4965
L.M.S. Oil Co., Ellis 1	185	5130
MacDonald & Burns, Moore 11	160	5004
Wilmington—		
Allied Pet. Co. (LB) No. 29	300	3360
General, Flint 1	215	5670
Hollywood Oil Co., Baxter 4	500	3695
Richfield, Pacific Dock (LB) 15	344	3085
Fruitvale—		
Western Gulf, KCL B-39	250	3896
Kern River—		
Helm & Smith, No. 9-A	18	675
Kettleman North Dome—		
K.N.D.A., No. 27-22Q	1300	8670
Round Mountain—		
Crestmont Oil Co., Staley 5	182	1605
Green Bay Co., Conry 1	•	2368
West Coyote—		
Standard, Bastanchury 3	•	6078
East Coalinga Eocene—		
Tide Water Associated, Guardian 66	•	7200

•Failures; †Junked; ¶Million cu. ft. gas.

West Texas Fields

More drilling follows good showing of Wasson extension.

Bennett field outpost logs encouraging oil indications.

Midland, Texas.—The east extension given the Yoakum County sector of the Wasson field by Honolulu Oil Corporation's Kendrick 1, SW NE SW Section 825, will attract additional development since this outpost logged 179 feet of soft lime, carrying oil saturation, before reaching bottom-hole water, and is rated among the large natural-flowing producers. The well flowed 516 barrels of oil natural through casing from pay at 4983-5162 feet, with an elevation of 3567 feet, and encountered a small amount of sulphur water at 5162-69 feet. The hole has been plugged back to acidize, with prospects of becoming one of the largest producers in the field, although it is 45 feet lower structurally on the solid-lime marker than a well 1¼ miles west by south.

Logging top of anhydrite at 2380 feet, Shell Petroleum Corporation's Rutts 1, SW NW NW Section 743, registered a favorable structural position on this marker in seeking a 1¼-mile southeast extension for the Bennett field, Yoakum County. It is 32 feet higher than the discovery well, based upon an elevation of 3544 feet for the outpost, which is drilling in salt series at 2750 feet. Three-mile northeast extension to the field will be sought by Shell Petroleum Corporation before the end of the year in acquiring lease of 1360-acre block for $32.50 per acre, including a cash bonus of $7.50 per acre, plus an obligation to drill a lime test in NE Section 616. Texas Pacific Coal & Oil Company has renewed lease on 160-acre tract adjoining this block on the north for a bonus of $20 per acre cash.

Rogers & Rogers' University 1, C E½ SW Section 40, Block 9, southern Andrews County wildcat, 1⅝ miles north by west of small production in the Holt pool, flowed 3 barrels of sulphur water hourly through tubing when tested at 4539 feet, or 1390 feet sub-sea. The well may be plugged back for a second test. It is 3 miles east by south of the Emma pool, which is the most active in the county. Superior Oil Company of California's University 1, SEc Section 35, Block 10, separated from

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
L. R. Hagy-Harrington-Marsh, Durrett 1	¶23.6	2835
Thornburg 1	¶40.9	2910
Magnolia, Fee 45, lse. 244	†	2970
Gray County—		
Gayden Oil Co., McKinney 4	20	3340
Magnolia, Merten 20-B	253	3260
Texas Co., Williams 20	1749	2890
Hutchinson County—		
Drilling & Exploration, Pond 8	480	3093
Gulf-Panhandle, Dial 86	276	3107
Henderson et al, Whittenburg 1	¶11.4 & 75	2710
Seaboard Oil Corp., Whittenburg 8	435	2707
Stanolind, Hale 11-B	273	3070
Watkins 17-A	334	2921
Watkins 18-A	293	2885
Texas Plains Oil Co., Watkins 9	561	3044
Texilvania Oil Co., Harvey 5	646	3055

•Failures; †Junked; ¶Million cu. ft. gas.

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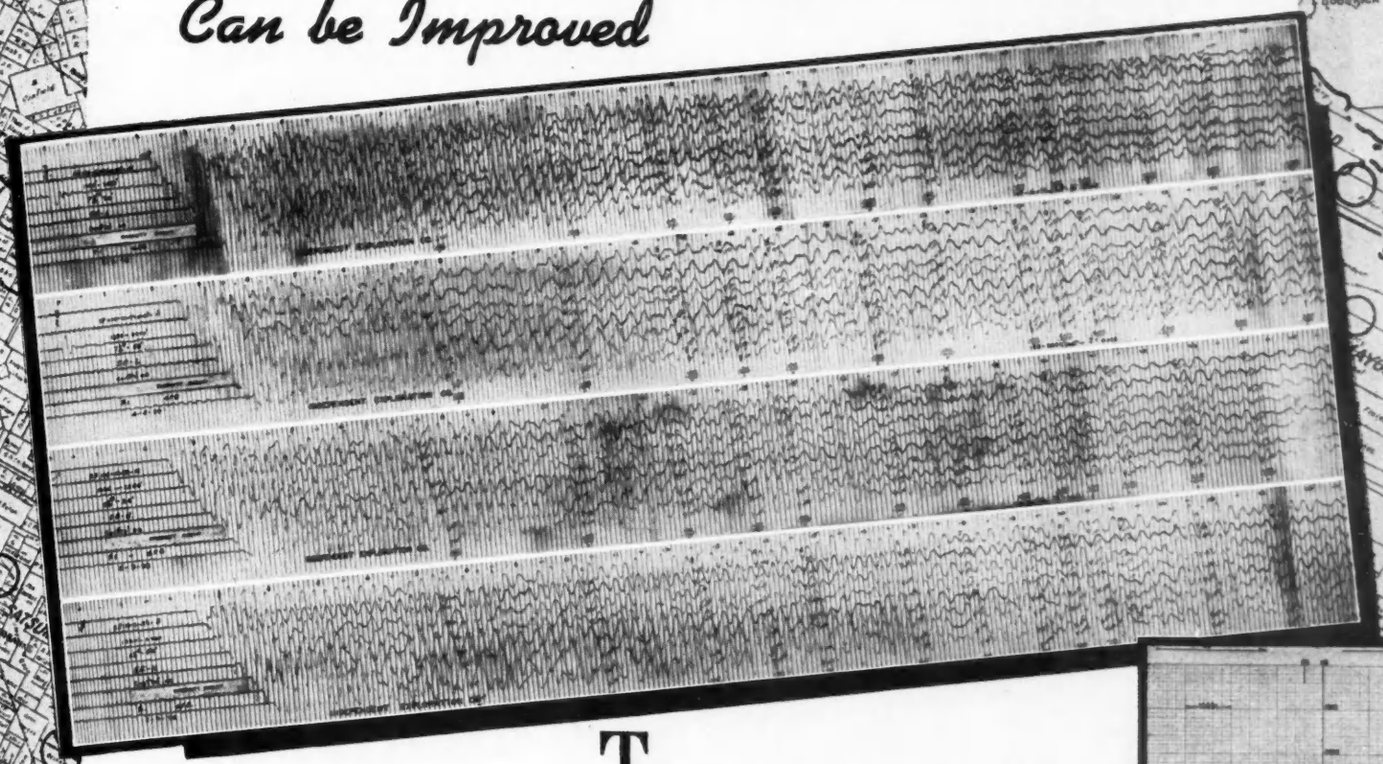

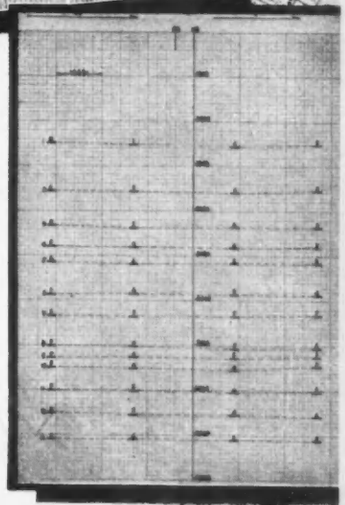

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Experienced in 22 States and in Foreign Fields

production by a vacancy strip being developed by Anderson-Prichard Oil Corporation, logged nominal saturation in coring to 4227 feet, or 1051 feet subsea. Tubing has been landed for a production test.

The eleventh producer for the Slaughter field, Hockley County, largest oil area in the north basin, without a pipe line outlet, was awaiting gauge late last week. The Texas Company's Slaughter 3, south offset to the most northwesterly producer, flowed small heads after using 1000 gallons of acid at 4984 feet, and has been reacidized. The company's Mallett 1-B, 3 miles northwest of the discovery, was drilling at 4855 feet, with an elevation of 3569 feet, and is slightly higher on structure. Snowden & McSweeney Company's Slaughter 1, southeast edge well, flowed 25 barrels daily by heads after using 2000 gallons of acid at 5069 feet, and will reacidize. The latter farmed out its lease on the northeast 245 acres in League 37, Zavalla County School Lands Survey, to Murchison et al for ⅛ overriding royalty on flowing production and 1/16 over ride for pumpers. The latter spudded their first test, which is a southwest offset to Gulf Oil Corporation's Mallett 2, flowing with the aid of flow valves at rate of 200 barrels daily. The hole was plugged back from water at 5090 feet to 5070 feet for nitro shot and multiple acid treatments.

Gulf Oil Corporation's Swenson 1, C NW H&GN Section 25, Block 2, northeastern Garza County wildcat, is credited with having logged sufficient oil saturation in lime section to warrant a drill-stem test. The hole is bottomed at 7911 feet, with contract calling for an 8000-foot test, or a decisive depth in the Ellenberger. It is the only Ordovician project in West Texas that is commanding attention.

Bert Fields et al's Speer 1, SW NW NE T&P Section 6, Block 44, T-2-S, Ector County wildcat, logged minor oil saturation at intervals in lime at 4375-4467 feet, and tested 3 bailers of oil and water in 3 hours.

Magnolia Petroleum Company's University 1-6, southeast corner of Section 6, Block 30, Crane County semi-wildcat and a north offset to a pumper failed to encounter any appreciable oil shows in drilling to 3472 feet, or 826 subsea. It is 4 feet below the water table logged by the offset.

Aloco Oil Company's Tubb 1-A, near southwest corner PSL Section 20, Block 32, 1¼-mile southeast outpost for the Sand Hills field, Crane County, flowed 193 barrels of oil in 18 hours after using 5000 gallons of acid at 4504 feet. The well bailed two barrels of oil per hour previously when shot with nitro.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Cochran County (Wildcat)—		
Magnolia, Wright 1	*	5054
Crane County (Jordan)—		
Texas Co., University 3-D	5156	3555
Ector County (Foster)—		
Broderick & Calvert, Foster 11	1235	4285
Witcher 4	1487	4285
Witcher 7	2027	4250
Continental, Johnson 4	719	4268
Ector County (Goldsmith)—		
American-Maracaibo Co., Scharbauer 7-A	911	4210
Gulf, Goldsmith 129	2768	4205
Shell, Scharbauer 6-A	569	4215
Ector County (Harper)—		
Texas Co., Parker 7-B	1023	4200
Ector County (Jordan)—		
Skelly-Atlantic, University 4-D	519	3680
Fisher County (Rotan)—		
Magnolia, Howard 2	271	3502
Fisher County (Wildcat)—		
Daube et al, Hardy 1	*	3736
Gaines County (Wasson)—		
Continental, Wasson 2-49	1018	4988
Hockley County (Slaughter)—		
Richardson Oils, Slaughter 2	816	4989
Howard County—		
Anderson-Prichard, Hyman-Scott 1	*	3032
Ennisbrook Oil Corp., Texas L. & M. Co. 18	1353	2902
Merrick-Murphy & Lamb, Chalk 2-B	1278	2971
Murko O&R Co., Chalk-Conoco 2-A	1113	2984
North Central Oil Co., Hyman 3-A	10	1336
Shell, T&P Land 3-A	218	2833
Jones County—		
Sinclair Prairie, Williams 1	*	3390
Pecos County (Masterson)—		
Childress Roy. Co., Masterson-I.T. I.O. 3	155	1453
Pecos County (Pecos Valley)—		
Kone Prod. Co., Pecos Valley Oil Co. 1-A	337	1632
Pecos County (Wildcat)—		
Gregory et al, O'Neill-Humble 1	*	1777
Reeves County—		
Lagoki Oil Co., Richards-Shaw 1	†	1581
Stonewall County—		
Gen'l Crude Oil Co., J. D. Smith 1	*	5735
Upton County (McCamey)—		
Hancock & Knox, Baker-Republic 1	1098	2309
Ward County—		
Gulf, Estes 106	912	2655
Heidrich et al, Bertner 1	670	1850
Winkler County (Emperor)—		
Texon O&L Co.-Group 1 Oil Corp., Cowden-Conoco 2	517	2986
Winkler County (Kermit)—		
Humble-Tide Water, Walton 12-D	647	2990
Magnolia, Walton 186	1850	2910
Winkler County (Scarborough)—		
Richardson Oils, Scarborough-Empire 5	489	2975
Yoakum County (Bennett)—		
Shell, Bennett 3	548	5260
Yoakum County (Wasson)—		
Texas Co., H. O. Wooten 1	385	5050
N. W. Willard 4	240	5100

*Failures; †Junked; ¶Million cu. ft. gas.

North Texas Development

Deeper drilling makes Panther area more attractive. Jackson-Canyon production extended half mile south.

Wichita Falls, Texas.—The Panther deep lime area in north central Archer County is commanding more attention as a source of high gravity oil through the successful completion of natural flowing wells in the lower Strawn near the 4300-foot level. The original deep pay uncovered in the top section of the Strawn at 3800-3900 feet proved erratic and did not encourage normal development. Six of the earlier tests were completed in this horizon, but more recent operations have been directed to the deeper zone.

J. A. Chapman and Ed. McFarlin's Wilson 1, NEc Lot 2, ATNCL Section 26, offset to 4300-foot producers, logged saturated sand at 4383-4405 feet, and registered an initial flow rated at 600 barrels daily. Broken sand, shale and lime, showing oil saturation below 3869 feet was cased off in landing 7-inch at 4382 feet. The Texas Company's Wilson 34-A, northeast offset, cored saturated sandy-lime at 4046-68 feet, and will continue to the lower pay before running pipe.

Blackwell Oil & Gas Company and Helmerich-Payne, Inc.'s Wilson 2, SEc Lot 11, Section 25, logged Ellenberger at 5120-5270 feet to become the first to reach this Ordovician member in the area. Nitro shot at 5070-5130 feet failed to yield oil or gas, although the well was originally completed last May at 5116 feet for a small producer, using input gas to raise the fluid. The hole was plugged back inside casing to 5051 feet, and gun-perforated with 103 shots at 4325-79 feet for a natural flow of 35 barrels of pipe line oil per hour, with good gas pressure.

Sinclair Prairie Oil Company's J. A. Hood 1, NEc ATNCL Section 18, 1 mile west of the Panther deep area, swabbed salt water with trace of free oil when tested in Detrital zone at 4985 feet. No shows of any consequence were logged in the Strawn lime, topped at 3865 feet. This outpost will be deepened to the Ellenberger. Westmount Oil Company's Dempsey 7, Block 10, League 3, Denton County School Lands, ¾-mile northeast of Holliday, Archer County, is awaiting orders after deepening from 4205 feet to 4616 feet, where it is bottomed in shale and lime shells. Top of Strawn lime was called at 4007 feet.

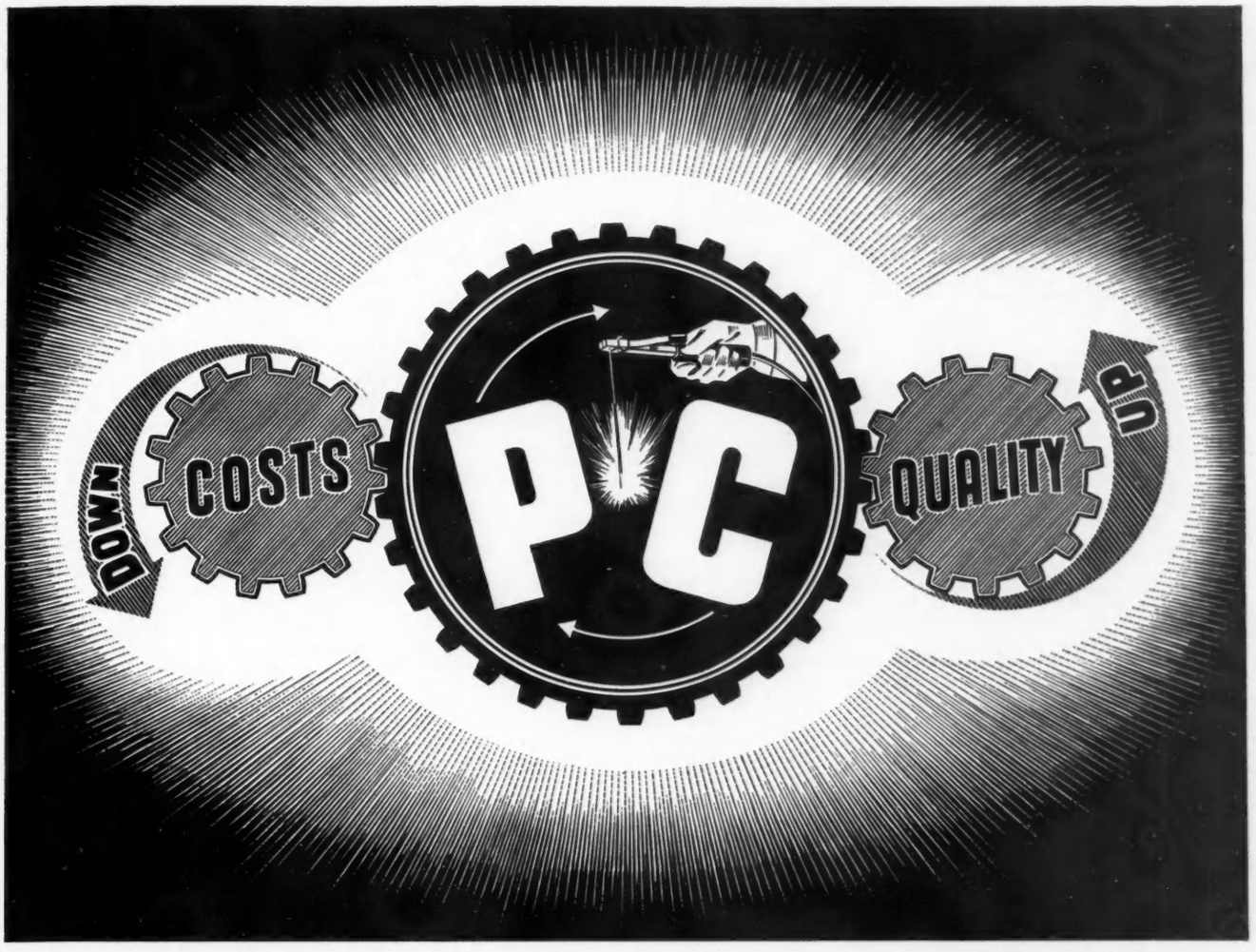
Eight Starts at K-M-A

The K-M-A deep field has 17 tests drilling with rotary above the Strawn, and 24 wells in process of completion or awaiting proration gauge. The area gained 8 new operations the past week, as compared to 9 the previous week. Discontinuance of Saturday production holidays late this month by the Railroad Commission is not likely to afford relief for K-M-A operators, as purchasers have indicated that more stringent pipe line proration will apply if crude runs exceed nominations.

Moran Bros., Inc.'s Waggoner Bros. 1-M, SEc Block 6, H. George Survey, A-454, north outpost for K-M-A, flowed 35 barrels per hour natural on preliminary gauge through tubing choke from broken sand at 3820-65 feet, with a total depth of 3874 feet. Top of lime was logged at 3756 feet. Shell Petroleum Corporation's Kempner 6, NEc Block 17, south portion of the field, flowed 420 barrels oil in 4½ hours through tubing from broken pay at 3784-3874 feet.

Shappell Oil Company's Jackson 3-D, half mile south extension for the Jackson-Canyon pool and the first oil completion from this pay in the Archer County sector, filled 200 feet with oil in one hour after drilling cement plugs to complete from sandy-lime at 2611-13 feet.

Panhandle Refining Company et al's Prideaux 2, A. Rohus Survey, A-1126, southeastern Archer County prospective Strawn producer, tested salt water when swabbed down at 3266 feet, and will be abandoned. Cores extracted from sandy-lime, topped at 3258 feet,



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showed free oil. It is located 575 feet southeast of the partnership's Prideaux 1, which also logged oil saturation in the same horizon, but tested salt water when plugged back from 4755 feet to 3275 feet for a production test. Additional prospecting in the Strawn is certain to take place in this old shallow area, although the above group have no immediate development plans.

Youngblood & Foree's J. E. Burnett 1, projected 4200-foot wildcat situated 1 mile west of Nocona, Montague County, logged top of Canyon at 1790 feet, and was drilling at 2120 feet.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (K-M-A)—		
White-Duncan & Dye, Ferguson 4, blk 14	500	3854
Archer County—		
Hampton et al, Lovern 1, sec 2481	*	1990
Clay County—		
Beasley et al, Shumake 3, blk 4..	15	1430
Gray & Thweatt, Enyart 4, blk 7..	*	293
Metzner & Burns, Taylor 11, sec 23	264	1122
Cooke County—	*	
Texas Co., Trubenbach 13	28	816
Trumter Oil Co., Stacy 1-B	33	756
Jack County—		
Benoil Co., Matlock 1-B	440	3178
Bissey & Powell, King 1	*	953
Danciger, Henderson 1	¶3.9	2888
Dearing & Son, Mitchell-Owens 6..	40	3160
Hill & Hill, Kuykendall 2-B	212	3238
Mays et al, McDonald 1	*	571
Nelson Oil Synd., Henderson 4-B...	371	2803
Royal Pet. Co., Kuykendall 1	300	3096
Montague County—		
Frank et al, Bouldin 1	¶½	850
Wichita County (K-M-A)—		
Egger et al, Preston 3, sec 20	800	3950
Haberle & Thornton, First Nat'l 4-B, blk 26	320	3849
Hammon et al, McCarty 17-M	720	3855
Hammon-Hanlon & Buchanan, Fassett-Tuttle 20	553	3959
King Oil Co., Waggoner Bros.-Gulf 6, lot 9	724	3811
Ryan Cons'ld Pet. Corp., Nance 130	1080	3806
Ven-Mex Oil Co., Big Wichita River 2-A	1990	3732
S. K. Vierson-A. D. Cochran, Wigley 2-A	480	3905
Wichita County—		
Bell O&G Co., Powell 38	*	1242
Bridwell Oil Co., Dodson 1	*	1753
Cochran & Cain, Waggoner Est. 1..	*	1675
Haberle & Thornton, First Nat'l Co. 1-D, blk 26	*	492
Hamilton et al, Martin 3-A, sec 36	18	557
Tucker Oil Co., Taylor 35-B, blk 97	*	1657
Young County—		
Cable Oil Co., Snyder 43	*	631
Chambers & Humphreys, Benson 10, sec 1392	35	902
Cosden Pet. Corp., Graham 2, sec 1	75	3503
Doss et al, Webb 2, lot 1	*	800
Gorsuch Oil Co., Matthews 27	8	730
Stuckey O&G Co., Hamilton 1-A, sec 3401	*	927
West & Honea, Honea 6	20	845
Willis et al, Stewart 4-B	*	868

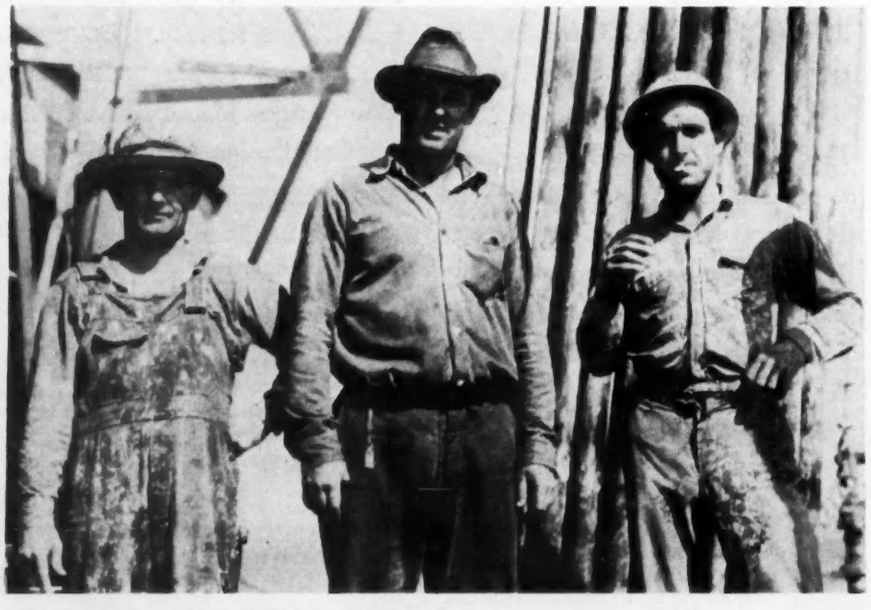
*Failures; †Junked; ¶Million cu. ft. gas.

Panhandle gas order revised

Panhandle wells producing 100,000 cubic feet of gas to the barrel of oil, or more, are to be classified as gas wells, and put on gas proration schedules wherever they are in effect beginning November 1, 1938. This provision was included in an order issued by the Texas Railroad Commission and includes those gas wells which have in the past been exempt because of the volume of water produced along with the oil.

Pecos, Texas.—The West Texas Refining Company's 5000-barrel daily capacity crude skimming and cracking plant here has been sold to the Southwestern Wrecking Company, Tulsa. The purchaser has moved in a wrecking crew to dismantle the plant, which began operations January, 1929, using Winkler County crude delivered by a 34-mile 6-inch line built by the Skelly Oil Company. The plant has been inactive for a number of years.

Midland, Texas.—Phillips Petroleum Company has placed in operation a 7,000,000 cubic foot daily capacity absorption type natural gasoline plant in the Harper field, Ector County. The unit is located in NE NW T&P Section 27, Block 44, T-2-S, and operates in conjunction with the company's plant in the Judkins field, which has been on production since October, 1930. Gasoline-laden absorption oil is transported via a 6½-mile 4-inch line from the new plant to the Judkins unit for processing.



M. F. Hatcher, T. W. White (driller) and W. L. Irwin pause from their work on Gulf Refining Company's Louisiana State PP 4, at Timbalier Bay, long enough to get their picture taken.

East Texas Fields

Bethany deep test plugged back for gasser

Shreveport.—The Texas Company's Claude Adams 1, Thomas Cox Survey, Panola County, Texas, which set a new depth record for East Texas border counties, reaching total depth of 11,303 feet in Permian salt, logged at 11,067 feet, was found unproductive in a series of tests in the lower Marine topped at 7792 feet, and last week was plugged back to 5800 feet and casing perforated in the basal Glen Rose lime (Pettit) and completed as a three million foot gas producer. It is Bethany's first commercial well in this horizon.

The well was completed in that horizon after casing was perforated at 5724 to 5740 feet with 20 shots, and from 5625 to 5660 feet with 30 shots. Rock pressure stood at 1250 pounds. Elevation is 217 feet.

Following are the results of the perforations in the lower Marine, all of which showed salt water: perforated from 8910-30 feet, with 12 shots; perforated from 8865-85 feet, 30 minute drill-stem test, no pressure ¼-inch chokes top and bottom, recovered 32 stands of brackish water; perforated from 8520 to 8550 feet, with 12 shots;

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Humble, Kangerga 70-A (333¼-ac)	5500	3686
Kangerga 71-A (333¼-ac)	5300	3748
McClanahan-Venable Oil Co., Flannigan 10 (33¾-ac)	7400	3763
Sayre Oil Co., Cansler 8 (38½-ac)	5000	3747
Kilgore Area—		
DeMayo et al, Benson 7 (27.7-ac)	3600	3721
Dodwell et al, Alexander 4 (3.6-ac)	2400	3546
Everts Dri. Co., Warren 3 (22½-ac)	1500	3822
Gulf, Spear 45 (277.56-ac)	6400	3550
J. K. Hughes Oil Co., Givens 14 (22.67-ac)	8000	3628
Shell, Bates 22 (64.96-ac)	7000	3621
Bates 23 (64.96-ac)	7000	3632
Spear et al, Ector 2	1500	3552
Suhr, Tr., Butts 2	1800	3564
M. Ulmer-J. K. Livingston, Still 1 (18-ac)	192	3581
Still 2 (18-ac)	240	3590
Still 3 (18-ac)	240	3567
Longview Area—		
Humble, Edwards 46 (271.6-ac)	5000	3670
Mattox 10 (62.41-ac)	2600	3668
Mallison Oil Corp., Everett 2 (20-ac)	360	3604
Phillips et al, Sanders 2 (2.67-ac)	2000	3583
Stanolind, Lathrop 32-B (114.8-ac)	2200	3610
McGrede 10 (52.9-ac)	6600	3595
Sun, Watkins 6 (44.31-ac)	240	3678
Turnbow et al, McKinley 4 (16.36-ac)	8000	3655
Gregg County—		
Humble & Gulf, Horton-Dickson 11	¶15	7305
Houston County (Kittrell)—		
Boone Bros. et al, Trinity State Bank 4	26	1946
Titus County (Talco)—		
Humble, King 61 (1053.36-ac)	316	4236
Moore, Tr., Belcher 1 (5-ac)	319	4293
Angelina County—		
W. C. Atkinson et al, Southern Pine Lumber Co. 1	*	2544
Marion (Rodessa)—		
Arkansas, Hussey 1, Lockhart sur..	¶25	5937
Gulf, Davis 1, Jno. Hanks sur	240	6101
Panola (Bethany)—		
Texas Co., Adams 1, Thomas Cox sur	¶3	5740

*Failures; †Junked; ¶Million cu. ft. gas.

perforated 8455-80 feet, with 12 shots, drill-stem test open 30 minutes ¼-inch choke top and bottom, 3100 feet brackish water; perforated with 24 shots 8135-60 feet, drill-stem test, ¼-inch choke top and bottom, in 4 hours flowed small amount of mud and wash water under 53 pounds pressure, flow stopped short time, then continued in small stream; perforated with 12 shots 7150-75 feet, drill-stem test, ¼-inch choke top and bottom, no pressure, 65 stands salt water; perforated 24 shots 5980-6012 feet, drill-stem test, ¼-inch choke, top and bottom, open 35 minutes, 56 stands salt water.

Arkansas Fuel Oil Company's Hussey 1, Charles Lockhart Survey, in the southwest offshoot of the Jefferson area, was completed as a 25 million foot gasser in the Hill horizon.

Buffalo extension test plugging back from water.

Tyler.—Swabbing test given T. J. Tucker et al's Sam Vane 1, prospective 1¼-mile north extension for the Buffalo gas-distillate field, Leon County, yielded salt water through perforations opposite lower sand at 5576-82 feet. Perforations have been cemented off to test the upper sand at 5503-45 feet. Water sand recorded by electrical log at 5585-5627 feet, with an elevation of 403 feet, was excluded in landing pipe at 5626 feet. It is located in the north corner of the Jas. Webb Survey, and has sufficient structural relief in the first Woodbine sand to make a gas-distillate producer.

Lone Star Gasoline Company's Steve Pate 1, D. J. Haskins Survey, provided a minor extension for the Buffalo area in registering an initial yield of 115,000,000 feet of gas through perforations at 5630-80 feet, having cased off water at 5748-82 feet.

John Mayo et al's Ann Waroch 1, 1½ miles east by south of Precilla, Houston County, logged water sand in Woodbine at 5885-90 feet, and is to be abandoned.

Plug-back operations on Bunn Drilling Company's Bowlin 1, Lone Star pool, Cherokee County, failed to attain water shut-off, and late gauge credited the well with flowing 5 barrels fluid per hour, averaging 25 percent water, on ¼-inch tubing choke. Gas volume is rated at 1,000,000 feet daily. The hole was plugged back from 4010½ feet to 4008 feet.

Texas drilling permits total 136 during week

The Texas Railroad Commission last week approved permits for drilling 136 new wells in Texas, eight less than were allowed the week before. No permits were approved in the East Texas field. East Central Texas operators reported eight locations.

West Texas operators were allowed 28 new locations, including 11 in Ector County, while 19 locations were reported from West Central Texas. There were 30 permits approved in the Gulf Coast area, while Southwest Texas operators reported 23 locations, including 12 in Duval County.

The commission approved 13 permits in the North Texas District, while Panhandle producers were allowed 15 locations.

Southwest Texas Fields

New wildcat play in Nueces north and west of Robstown. Saxet well blowout makes 10-acre crater and is burning. Samfordyce outpost passes 9000 feet for area record.

Corpus Christi.—A new wildcatting play which may lead to the development of another important producing area in Nueces County is getting underway north and west of Robstown and near the Nueces River. This area has two active operations and three more to be commenced within the next few days, all projected to 7,000 feet or deeper.

Stanolind Oil & Gas Company has derrick up for Clark 1, Lot 45, Nueces County Winter Vegetable Gardens, while Seaboard Oil Corporation is waiting on cement on surface casing in Wilson 1, Block 6, 3000 feet northwest of the Stanolind operation. These tests are eight miles north of Robstown.

Howard Pyle and A. E. Masterson, Jr., on a block four miles north of Robstown, will drill Eschberger 1, 330 feet south and west lines of Lot 5, Block 2, Nueces River Irrigation Park Subdivision. George Buescher will drill Dittlinger 1, tract 35, Pauls Subdivision, four miles west and north of Robstown. Wellington Oil Comany plans another test on the Angelita structure, to the northeast and in San Patricio County.

This general region has been the scene of much leasing and geophysical exploration during the past several years. Several deep tests have been drilled in the region, indicating it to be a general high.

Richardson Petroleum Company was continuing to test Cain & Sechrist 24, discovery well of a deep sand in the Saxet field, Nueces County. The test, bottomed about 9927 feet, is flowing several barrels of distillate per hour with a lot of gas through small choke. No definite information has been released.

One of the worst blow-outs ever to occur in the Saxet field killed two men and injured several others when Jay Simmons' L. Harrell 2, about 1½ miles northeast of Clarkwood, went out of control October 21 while surface casing was being set to 1200 feet. It has cratered to about 10 acres and is burning. This is the famous crater area of the field, where a number of tests have been wrecked.

Rutherford Oil Corporation was drilling plugs in H. A. Schirmer 1, Section 1, one mile east of the LaRosa field, Refugio County. As well as providing an extension to the field, it is expected to open a new and deeper producing sand. The test found the new oil zone at 6323-38 feet, salt water at 5338-42 feet, but went to 6513 feet before setting casing. One mile north of the field, Darby Petroleum Company's Rooke 1 was coring at 5445 feet. About 5½ miles northeast of production, Austin Corporation et al's Hunsdon was coring at 5960 feet.

The Texas Company's J. F. Weed 1, John D. Newell Survey, five miles east of LaWard in Jackson County, was holding considerable attention, indicating a Frio sand field of at least distillate proportions. It found a sand section at 7071-76 feet showing for a gasser spraying distillate, then ran a drill-stem test at 7360-80 feet where it recovered 125 feet of distillate and a good gas pressure.

Magnolia Petroleum Company's West 4-A, 1320 feet west of production in the West Ranch field, Jackson County, flowed 37.11 barrels on an 8-hour gauge through ⅛-inch choke, pressures being 1725 pounds on tubing and 2100 pounds on casing. Casing was landed at 5093 feet, sand section having been logged 5075-5108 feet.

Southern Minerals Corporation's Alkali Plant 3, north of the Saxet Heights (Corpus Christi) field, Nueces County, is making a small amount of oil and gas while swabbing from perforations 5074-78 feet. The test cored a sand showing gas at 5077-80 feet and oil at 5080-85 feet. It was drilled to 7,000 feet, plugged back and attempted completion. It may be a new sand for the field, or an extension to the north of the Heterostegina zone, where several small producers have been completed. Elevation is sufficient to account for the difference in sand levels. It had the regular pay at 3988-4038 feet.

Drilling to 8302 feet, Magnolia Petroleum Company's R. V. de Garcia, 1126 feet east of the discovery of the Bandera field, Jim Wells County, has been plugged back and casing set to complete in gas sand topped 6421 feet, same as the discovery. It is expected to make some distillate.

Transwestern Oil Company's B. H. Dunlap 1, 6000 feet southwest of East Premont field, was drilling ahead below 6400 feet, nearing the pay level of the field.

Valley's deepest test has passed 9000-foot level

Mission.—Phillips Petroleum Company's Rafael Flores 1, ¼ mile north of the main producing area of the Samfordyce field, Hidalgo County, had passed the 9000-foot level on the deepest operation ever drilled in this portion of the Rio Grande Valley. The test is reported to have had a gas showing in a sandy section at 8840-60 feet, but this is not definitely known.

Having taken over the operation of R. E. Harding et al's E. M. Card 1, Lot 8, Block 8, Hidalgo Canal subdivision, 2 miles west and 1 mile north of the McAllen discovery well in Hidalgo County, Phillips Petroleum Company also is reported to be making preparations to complete. Casing is supposed to have been run after the

well was carried to 7500-foot contract.

Union Sulphur Company was continuing to test through perforations below 8000 feet in American 11, deep test in the Mercedes field. The hole was drilled to 9618 feet, and has been testing all levels indicated productive on an electric log.

H. C. Dean et al's A. F. Sheldon, about 1600 feet north of Samfordyce production and between it and the North pool, was in oil sand at 2835-39 feet and 2857-65 feet, attempting completion. It will tend to connect the two areas.

Sun Oil Company continues to uncover new sands in the Sun pool, Starr County. Olivarez 1, ¾ mile northwest of production, cored oil sand 4901-11 feet, but was carried to 5002 feet, where the hole is being reamed, either to go ahead or set casing on bottom. Speer 1, 1 mile southwest of production, failed to show in the regular sands and is coring below 5313 feet.

Second Kimble County test has Ellenberger

San Antonio.—Plateau Oil Company's Hunger 1, Duffner Survey No. 43, and 4822 feet due north of the discovery well of the Junction pool, Kimble County, was preparing to drill plugs after landing casing at 1765 feet. The bottom of the hole is reported at 1800 feet, where it bailed some oil while being drilled. No definite details are available, but it is believed that the test is in the Ellenberger at this level. Elevation is 1786 feet, ground.

To the southeast and in Kendall County, Millican and Norman's Werner 1, bottomed at 1002 feet, also in Ellenberger, is pumping about 10 barrels of oil and 25 barrels of water per day to establish the Sisterdale field. E. A. Graham has moved 1600 feet northeast of this test and has commenced another well on the Werner land. Success of the operation may give a new life to the Hill Country. Only a little exploration has been done in the general region and these discoveries will encourage further work.

On the Shattel prospect in Frio County Humble Oil & Refining Company's Marrs McLean 1, 1713 feet north of the discovery, was waiting on orders after setting surface casing. It will be drilled as soon as gauges are run on the Schley 1, discovery well of the pool. It is estimated at 50 barrels of 25-gravity crude per day from 4800 feet in the Austin chalk.

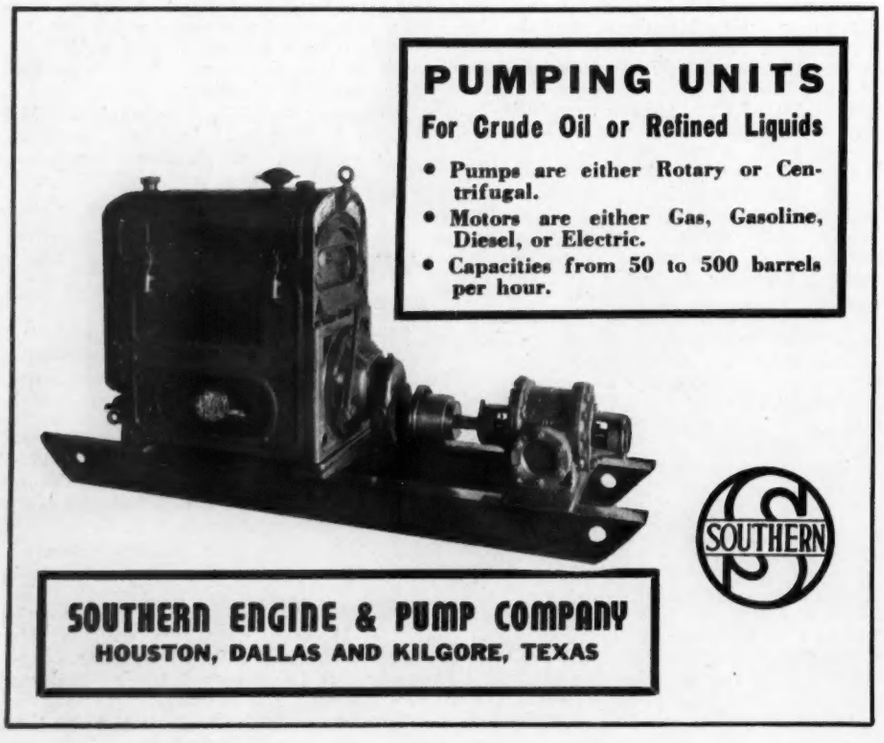
M. R. Tinkle's Blackwell 2, Roe survey, southwest of the Branyon field, pumped 40 barrels per day from the Dobie section overlying the Edwards lime at 2334-35 feet. An attempt was made to acid with 500 gallons, but a hole developed in the casing, preventing use of pressure. It will be deepened several feet before final completion.

Bastrop County's deep test was still awaiting 4¾-inch casing. Paul C. Teas made a deal with Continental Oil Company to furnish casing to test Grizzard 1, Graham League, on the Smithville prospect. The well made several drill-stem tests, considered unsatisfactory, and is bottomed 7175 feet in Edwards lime.

Ezzell extension

San Antonio.—Another one mile southwest production extension to the Ezell field, McMullen County, was anticipated with Edwin M. Jones testing H. Ezzell 40, SE Section 46. The test cored a silty sand with oil show at 1526-34 feet, drilled ahead several feet and set casing on bottom. One location north and the same distance west of this well, Ezzell 39, found a silty sand at 1496-99 feet and was carried to 1794 feet.

Approximately three-fourths of all the carbon black produced in the world is produced in the Texas Panhandle.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For Crude Oil or Refined Liquids
• Pumps are either Rotary or Centrifugal.
• Motors are either Gas, Gasoline, Diesel, or Electric.
• Capacities from 50 to 500 barrels per hour.
SOUTHERN
SOUTHERN ENGINE & PUMP COMPANY
HOUSTON, DALLAS AND KILGORE, TEXAS

SOUTHWEST TEXAS Completions

SAN ANTONIO DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bastrop County—		
Tarver, Rivers 1, Burleson survey..	*	2271
Bexar County—		
Soltner, Soltner 1, Von Ormy.....	3	710
Caldwell County—		
Bertrand, Hansen 3, Salt Flats....	45	2708
Martell, Wright 9, Salt Flats.....	69	2660
Ogden, Barber & Lovell 6, N. Dale	*	2698
Robinson & Coffield, Young 7, Branyon	50	2347
Tinkle, Blackwell 2, Roe survey...	40	2335
Weigand, O'Daniel 1, Hunter survey	*	2403
Guadalupe County—		
Marosis, Maierhofer 3, Peters sur..	*	1140
Marts & Beaven, Glenwinkle 1, Wakefield & Stewart sur	*	2525
Texas, Roamel 5, Darst Creek....	110	2602
United, Dix 11, Darst Creek.....	172	2534
Kendall County—		
Millican & Norman, Werner 1, sur 781	12	1002

LAREDO DISTRICT

Duval County—		
Arkansas, Cuellar 4, Tesoro	*	5124
Cox & Hamon & Gorman-Yoakam, Cuellar 52, Hoffman	250	2607
Crighton & Moore, Martin 3-A, Casa Blanca	82	1182
Darby, Heintze 3, Hoffman.....	*	2813
Government Wells, Lundell 30, Lundell	73	1528
Magnolia, Duval Ranch 10, sec 201, Eagle Hill	37	1462
Weil 16, Hoffman	325	2796
Mid-Continent, Rodriguez (Moreny) 1, N. Sweden	*	6155
Porter & Wheelock & Collins, Driscoll 4, Fitzsimmons	450	4420
Smith & Story & Joe Gier, Peters 1, sur 175	*	2728
Sun, Brueggemann 3, Fitzsimmons	600	4289
Lanning, Noake & Evans, Peters 4, Rancho Solo	102	2973
La Salle County—		
Fisher, Hall & Johnson (Ewing), Pugh 1, sur 93	*	780
McMullen County—		
Bishop & Albright, Nueces 3-A, Munson	15	1215
Bishop, Nueces 3-B, Munson.....	*	1199
Cities Service, Reed 1, sur 72.....	*	1545
Ezzell, Fee 23, Ezzell.....	575	1570
Jones, Ezzell 39, Ezzell, sec 36....	*	1794
Webb County—		
Appell, Bennett 1, Oilton	63	1919
Tucker & Stapper, Bruni 1, Cole...	50	3423
Smith & Hamill, Benavides 9-A, Cole-O'Hern	75	2892
Zapata County—		
Mathis, Garcia 60, Charco Redondo	*	1102
Texas, Jennings 122, Escobas.....	36	1307

CORPUS CHRISTI DISTRICT

Aransas County—		
Housh, Schofield & Thompson, Kent-Crane 1, Hollis subd.....	*	7520
Brooks County—		
Stutenroth, Singer 1, Alta Verde..	35	899
Calhoun County—		
Humble & Plymouth, Vandenberg 6, Heyser (perf 5477-80)	450	5600
Hidalgo County—		
Weekley, George 8, Samfordyce....	450	2855
Jackson County—		
Magnolia, Drushell 3, Cordelle.....	375	2687
West A-4, West Ranch.....	175	5108
Jim Wells County—		
Pan American & Earl Calloway, Cook 2, La Vaca gr.....¶20 & 28 (perf 5300-05½ ft)		5500
Texas Gulf, Smith & Gardner 1, Alice	475	5314
Nueces County—		
Amtex, Smith 3, Saxet	500	4942
Barnsdall, Humphreys 8, Saxet....	500	6012
Ohio, Shaffer 5, Luby	500	4425
Reed & Cox, Holloway 2, Clara Driscoll	115	5804
Seaboard, Luby 39, Luby.....	475	5178
Sun, McCann 5, Luby	60	5063
Refugio County—		
Copano, O'Connor 18-B, Tomoconnor	1250	5892
O'Connor 31-B, Tomoconnor	1400	5846
O'Connor 32-B, Tomoconnor	1500	5876
Geophysical & Coronado, Rooke 3, La Rosa	600	5920
Quintana, O'Connor 73-A, Tomoconnor	1500	5929
San Patricio County—		
Plymouth, Cole G-1, E. White Point	500	5645
Flynn 1, E. White Point.....	500	5678
Sparks 2, E. White Point.....	500	5673
Welder 104-C, Plymouth	400	5650
Victoria County—		
Echols, Lander 5-B, Heyser.....	650	5611
Gulf, Bonner 5, Heyser.....	525	5490
Williams 1, Heyser	600	5585
White 1, Heyser	*	6060

*Failures; †Junked; ¶Million cu. ft. gas.

Texas Gulf Coast

League City oil strike still awaiting final completion.

Chambers County wildcat produces small flow distillate.

Houston.—Midwest Royalty Company's Lobit 1, reputed opener of a new field southwest of League City (Perry and Austin Survey) in Galveston County, continues shut down without a production test while highly speculative acreage and royalty deals are pending. Reports are that the hole has been drilled to 9197 feet and 7-inch casing is set at 9182 feet; a 30-foot oil sand (Frio) was cored around 9100 feet, three other oil sands and a gas sand being logged above that level, showing 4 to 6 ohms on electrical log. The 30-foot sand is reported to show good saturation.

Reports that Midwest Royalty Company's 900-acre lease had been sold to Phillips Petroleum Company for $450,000 cash and $1,600,000 out of production was denied by the alleged purchaser. Phillips Petroleum Company, however, has purchased lease on 272 acres from Stewart Title Guaranty Company, paying $34,000 cash and agreeing to start a test within 60 days. This is the initial entry of Phillips Petroleum Company into the upper Texas Gulf Coast section.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barbers Hill—		
Atlantic, Engles 1	134	5530
Boling—		
F. & P. Prod. Co., Fee 1-A	24	376
Brenham—		
Freeport Sulphur, Pomykal 1	*	1688
Cedar Point—		
Standard of Texas, State 2-118	731	6000
Dickinson—		
Atlantic, Potter 2	687	8135
Humble, Fream 4	706	8090
Fairbanks—		
P. C. Bundy, Nevi 1	493	6841
Gem Oil Co., Reid 7	662	6852
Moore & Ahern, Whitehead & Rash 2	648	6853
Stanolind, Schumacher 1	¶6½	6940
Friendswood—		
Humble, Keisling & Dixon 8	609	6048
Hastings—		
Stanolind, Edwards 10	545	6080
Matsuhita 8	463	6080
Hitchcock—		
M. Stewart, Fee 7	566	5157
Hull—		
Guinn Oil Co., Abel A-13	34	898
Texas Co., Hannah Fee 12	398	5069
Humble—		
Wilson Oil Co., Wheeler & Pickens 3	43	1373
Old Ocean—		
Harrison & Abercrombie, Chenault 1	350	10,216
Orange—		
General Pet. Corp., State 2 (wo)	87	6015
Ryan, Tillery and Andrews, Peveto 2	*	6125
Segno—		
Humble, Kirby 9-B	109	8776
South Cotton Lake—		
J. R. Turnbull, Casey 1	*	7019
Stratton Ridge—		
Sterling, Kramer 1	*	5049
Thompsons—		
Humble, Lockwood Sharp A-X-41	127	3161
Tomball—		
Humble, Holderieth A-3	528	5557
West Beaumont—		
Stanolind, J. W. Hall 3	¶1	5629

*Failures; †Junked; ¶Million cu. ft. gas.

South of Anahuac, Chambers County, Salt Dome Oil Corporation opened a new gas-and-distillate field last week when Ogden 1 was perforated from 7515 to 7525 feet. The well came in making 5 to 10 barrels of distillate daily, 75 percent salt water, through a ¼-inch and 9/64-inch chokes. Tubing pressure was 900 pounds and the casing was sealed. Ogden 1 was drilled to 8149 feet before plugging back and completing.

In the West Cotton Lake area, Chambers County, F. A. Gillispie's Kirby Petroleum Company 1, Chambers County School Land Survey, was tested again from 6416 to 6434 feet and the well failed to flow when swabbed. The perforations were squeezed with cement and the operator is preparing to perforate from 6375 to 6400 feet.

On the south edge of Cedar Point field, Chambers County, Standard Oil Company of Texas made a potential test on State 2-118 last week. The well flowed 731 barrels in 24 hours through ¼-inch choke with a tubing pressure of 1000 pounds and the casing sealed. This is the best well completed to date in the field. State 2-118 was completed in Frio formation at 6000 feet after topping the oil sand at 5959 feet.

In the Seabreeze area, Chambers County, Sun Oil Company's Acom 4, HT&C Survey, came in last week flowing at the rate of 26 barrels of oil per hour and then went to gas. The well was completed in Frio sand at 8459 feet. The oil was flowing through ¼-inch choke and tubing pressure was 1200 pounds and casing pressure 2400 pounds.

A new record for pressures on flowing wells was established in the Texas Gulf Coast last week when Sun Oil Company recompleted Bayshore 1 at Palacious, Matagorda County, in a new sand. The well came in flowing gas and 150 barrels of distillate with tubing pressure of 6200 pounds, from 9278 feet. This well blew out and caught fire over a year ago while making around 350 barrels of distillate daily.

In the Iowa Colony area, Brazoria County, Normandie Oil Company's Myrtle B. Ramsey 1, HT&B Survey, was coring in shale at 6550 feet last week and it appears that the wildcat will be a failure. Although no information is being given out it is reported that it is running a little high but has missed the Frio sand.

Orange Field Oil Sand Cored

North of Orange in Orange County, Sun Oil Company's Lutcher-Moore 1, B. Johnston Survey, was coring in shale at 7829 feet at the end of the week after coring water sands at 7614 feet and at 7534 feet.

At Orange field, Gulf Oil Corporation has two wells which cored oil sands last week. Chesson 17 cored oil sands from 5543 to 5558 feet, 5558 to 5560 feet and from 5560 to 5568 feet. Seven-inch casing was set. Orange National Bank 2 logged sands showing oil from 5895 to 5897 feet and from 5957 to 5959 feet. The hole was down to 5981 feet at the end of the week. Red Bank Oil Company's Michel 3, Wm. Dyson Survey, was waiting on cement to set at 5936 feet after setting 5½-inch casing at 5643 feet. Sand showing oil was cored from 5532 to 5546 feet and from 5566 to 5574 feet.

About 3500 feet southwest from production at Eureka, Harris County, Tide Water Oil Company's Ford 1 was drilled to 8113 feet in salt water sand, topped at 8075 feet. Operators are planning to set 5½-inch casing to test sands at 7718 to 7726 feet. Jack Frazier's Hogg Brothers 2 at Eureka was tested the past week from 7726 to 7737 feet and flowed 42 percent oil and 38 percent salt water.

South Louisiana

South Houma wildcat testing broken sand after blowout.

New producing horizon indicated by Bay St. Elaine test.

Lake Charles.—South of Houma, Terrebonne Parish, Shell Petroleum Corporation attempted a drill-stem test on Peters 1 last week and when going in the hole the wildcat started flowing mud from 10,967 feet. Circulating and adding heavy mud brought it under control and a drill-stem test is to be made from 10,948 to 10,967 feet where broken sand and shale was cored with oil shows. Should the test show commercial importance the well probably will be completed at this depth and open another oil field for South Louisiana.

The Texas Company has evidently discovered a new producing horizon at Bay St. Elaine, Terrebonne Parish. State 18 came in last week flowing 364 barrels of pipe line oil daily through ⅛-inch choke from Miocene at 6834 feet. Tubing pressure was 2700 pounds and casing pressure 2850 pounds. The oil tested 23 gravity. Hole was drilled to 6811 feet and cores from 6633 to 6689 feet showed shale and sand with oil shows. The well blew out while reaming at 6775 feet.

At Lake Barre, Terrebonne Parish, The Texas Company's State 42 failed to show in the new deep sand from 10,460 to 10,507 feet when the hole was swabbed. The setting is being pulled. Casing was perforated with 140 holes and a drill-stem test showed 1½ joints of distillate.

In the Lirette area, Terrebonne Par-

ish, Humble Oil & Refining Company last week completed R. Verret 1 in a new gas sand at 8445 feet as a gas well. No gauge was given on the well and operators are now moving the drilling barge. Hole was drilled to 11,767 feet and was plugged back.

Shell Petroleum Corporation's second well, Burdin 1, on the Lake Verret prospect, St. Martin Parish, indicated last week that it might be the discovery well of a new field. A drill-stem test from 8017 to 8032 feet showed 8 stands and 1 single of 39 gravity oil and 8 stands and 1 single of salt water in 10 minutes through ¼-inch chokes. After this test it was drilled ahead and logged another broken formation at 8177 feet. At the end of the week it was coring in sand and shale at 8375 feet. Broken formation with a show of oil was cored at 8291 feet.

On the Lake Mongoulois salt dome, St. Martin Parish, The Texas Company was drilling in hard shale at 9800 feet at the end of the week after coring hard sandy lime with oil odor from 9601 to 9617 feet.

Shell Petroleum Corporation will make tests on Godchaux 1 at LaPlace prospect, St. John the Baptiste Parish. The wildcat was drilled to 11,005 feet and was plugged back, casing was perforated with 40 shots from 8925 to 8935 feet, and cement retainer set at 8916 feet. After cement hardens, the company will probably first perforate from 8923 to 8927 feet, where oil sand was cored while drilling to 11,005 feet.

In the Golden Meadows area, Lafourche Parish, The Texas Company's La Terre Land Company 1 is still waiting on cement at 10,005 feet after making a drill-stem test from 9975 to 10,005 feet. The casing was perforated with 84 holes, and in 21 minutes with the packer set at 9955 feet recovery was 180 feet of distillate through ¼-inch chokes. Pressures ranged from 2800 to 3250 pounds. The perforations have been squeezed and casing is to be perforated higher.

Magnolia Petroleum Company's W. G. Bowden 1, Evergreen area, Avoyelles Parish, topped Sparta at 7500 feet and cored shale and sand from 7592 to 7600 feet, and in that core 6 inches of sand with a good odor of oil and a fair cut was logged. This wildcat is reported to be running high on structure and may open another new Sparta producing field, the second for the territory.

Two locations have been made at Bayou Blue, Iberville Parish, by Humble Oil & Refining Company after it abandoned Wilberts 8 at 5812 feet in salt. Schwing Lumber Company 2 is 330 feet south and 330 feet west from the northeast corner of Section 73-9s-10e. Wilberts 9 is 1514 feet east of the west line and 2076 feet north of the south line of Section 66-9s-11e. The company is seeking a deeper sand at Bayou Blue, and Wilbert 8 flowed 16 barrels per hour from 5200 feet but finally it went dead.

Louisiana Crusader Oil Company completed its second well at Choctaw, Iberville Parish, last week in a sand deeper than the first producer. Schwing 3 was completed in the deep Oligocene after casing was perforated with 118 holes from 8376 to 8396 feet, flowing 680 barrels of 38.7 gravity oil daily through ¼-inch choke. Tubing pressure was 1000 pounds and casing pressure 1100 pounds. This makes the third well completed on the northwest flank of Choctaw in deep Oligocene. Louisiana Crusader Oil Company made location for Schwing 4, 480 feet north of the south line and 820 feet west of the east line of Section 29-8s-11e.

At Lafitte, Jefferson Parish, The Texas Company completed Marrero 3 in a new horizon. Casing perforated with 100 holes from 9845 to 9868 feet, it came in flowing 985 barrels of pipe line oil daily through ⅜-inch choke, gravity 35.5 degrees. Tubing pressure was 1000 pounds and the gas/oil ratio was 351 to 1. Hole was drilled to 10,300 feet, and 9⅝-inch casing was set at bottom. This is one of the longest strings of 9⅝-inch casing set in this field. The usual procedure is to set 7⅝-inch casing on the sand. The company is trying to complete Rigolets Cooperative Fur Company 10 at Lafitte. After setting 7⅝-inch casing at 10,188 feet, it was perforated with 80 holes from 10,100 to 10,124 feet. No recovery was obtained on a drill-stem test and the casing was reperforated with 181 holes from 10,002 to 10,037 feet.

Grand Bay, Plaquemines Parish, was extended 1320 feet west last week when Gulf Oil Corporation completed Grand Prairie Levee District 2-A at 6149 feet. It made 155 barrels daily by heads, 28.4 gravity oil, through 7/32-inch choke. Tubing pressure was 100 pounds and casing pressure 1200 pounds. The company's Quarantine Bay QQ 4, 1220 feet south of production at Quarantine Bay, was completed at 8120 to 8149 feet flowing 107 barrels of 32.9 gravity oil daily through 3/16-inch choke. Hole was drilled to 11,014 feet and was plugged back.

Western Gulf Production Company will try to establish production at Potash, Plaquemines Parish, where Humble Oil & Refining Company has drilled a number of shallow core holes and also one 10,000-foot dry hole. Location has been made for Pascale Encalade 1 and Sam Treadaway 1, both in Section 6-18s-27e.

In New Orleans Parish, W. T. Burton has an interesting wildcat drilling, but very little information is being given out about it. State Lake Ponchartrain 1, in Lake Ponchartrain, was drilling at 8265 feet in hard sand and lime at the end of the week and is reported to have made a drill-stem test up the hole.

In Cameron Parish, Chalkley area, Humble Oil & Refining Company perforated casing in Hanszen 2 from 8562 to 8568 feet and failed to get a good test. Cement retainer has been set at 8550 feet and another test will be made. An electrical log showed possible oil sands at 8473 to 8482 feet, 8489 to 8492 feet, 8566 to 8571 feet, and at 8664 feet.

At West Hackberry, Cameron Parish, Superior Oil Company completed another well in the flank sand last week. Doris Kaough C-1 made 300 barrels of pipe line oil daily, 38.5 gravity, through 10/64-inch choke with tubing pressure of 650 pounds and casing pressure of 2100 pounds. Casing was perforated from 6550 to 6580 feet with 120 holes; from 6540 to 6550 feet with 15 holes, and from 6510 to 6540 feet with 120 holes. The previous week the well made dry gas from a new sand at 6742 feet.

On the east flank at Gueydan, Vermilion Parish, Buckley et al made location for Mulvey Irrigation Company 1, 2730 feet east and 1170 feet south of NWc 34-11s-1w. On the north flank of the field, A. M. Barbe made location for G. L. Humble 1, 2400 feet east and 60 feet north of SWc 27-11s-1w.

Pure Oil Company announced a third location in the Lowry area, Cameron Parish. Calcasieu National Bank 3 is 2900 feet south and 600 feet west of NEc 19-12s-4w.

Atlantic Refining Company's discovery well, Klumpp 1, northeast of Tepetate, Acadia Parish, is making 85 barrels of 55.8 gravity distillate and 4,000,000 cubic feet of gas daily from 7970 feet, flowing through 5/16-inch choke, tubing pressure 2800 pounds and casing pressure 2900 pounds.

Bennett Oil Corporation completed Groce et al 1 at Jennings, making 7 barrels per hour through ¼-inch choke after oil sands were cored from 5280 to 5350 feet. Seven-inch casing was set at 5320 feet.

The Texas Company probably will open a new oil sand at Jefferson Island, Iberia Parish, the coming week when a test is made on State Lake Peigneur 1, 12s-5e. The hole was drilled to 7997 feet in salt, topped at 7880 feet. Seven-and-five-eighths-inch casing has been set. Several good oil sands were cored up the hole. The discovery well was completed below 8100 feet.

SOUTH LOUISIANA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Big Lake—		
Union Sulphur, H. Hebert 1, dr to 10,521 ft, pb and comp	7	9157
Charenton—		
Kniseley Oil Co., Hertel 2	30	1138
Choctaw—		
Louisiana Crusader, Schwing 3	680	8396
Dog Lake—		
Texas Co., State 8	418	6813
East Hackberry—		
Union Sulphur, Doiron 9 (wo)	947	7097
Jennings—		
Bennett Oil Corp., Grace et al 1	168	5350
Lafitte—		
Texas Co., Marrero 3	985	10300
Quarantine Bay—		
Gulf, State QQ 4, dr to 11,014 ft, pb and comp	107	8149
Sorrento—		
Pan American, United Lands 15	*	1569
West Hackberry—		
Stanolind, Carter Sweeney 12	¶½	3544
Superior, Dorisse Kaough C-1	300	6580
Acadia Parish—		
Atlantic, Klumpp 1, ne of Tepetate, 12-7s-2w	83	7970

*Failures; †Junked; ¶Million cu. ft. gas.

32 of 48 Louisiana permits in South

Shreveport.—Forty-eight drilling permits were authorized last week by the Louisiana Conservation Commission of which 16 were in North Louisiana parishes as follows: Bienville, 1; Bossier 1; Caddo, 5; Grant, 1; LaSalle, 2; Morehouse, 2; Sabine, 2; and Webster, 2. Those in South Louisiana were divided among the following parishes: Acadia, 6; Assumption, 1; Calcasieu, 2; Cameron, 2; East Baton Rouge, 2; Evangeline, 2; Iberia, 1; Iberville, 1; Jefferson, 1; LaFourche, 3; Plaquemine, 5; St. James, 1; St. Martin, 1; St. Mary, 2; Terrebonne, 1; and Vermilion, 1.

North Louisiana Fields

Shreveport area test below expected depth, no results.

Opening of shallow production in DeSoto seems likely.

Shreveport.—The second failure in the basal Glen Rose lime horizon of Shreveport's new oil field appeared likely last week as Hollywood Oil Corporation's C. & B. Realty Company 1, NE NE 22-17n-14w, Caddo Parish, five miles south of the field's two oil producers, failed to pick up any saturation in that horizon and cored ahead to 6020 feet without results.

Operators were arranging late in the week to run formation tester in the Jeter, Hill and Gloyd horizons of the Glen Rose above the Petitt producing zone. This test logged massive anhydrite from sub-sea depth of 4213 to 4471 feet as compared to the same formation logged at sub-sea depth of 4164 to 4425 feet in R. E. Allison's Ellerbe 2, SE NE 28-18n-14w, west offset producer to the discovery well of the field.

Allison's State of Louisiana 1, C SE SE 28-18n-14w, one half mile south of the two oil wells in the field, which logged 38 feet of porous and partly porous formation in the Petitt, was completed as a dry gas well. Total depth is 5612 feet. Estimated open flow production was 50 million cubic feet daily. This test logged massive anhydrite from sub-sea depth of 4162 to 4424 feet, and electrical log showed porous lime from 5535 to 5545 feet, then 3 feet of partly porous lime, a 4-foot shale break, and then 3 feet more of porous lime, with the rest of the hole to 5612 feet lime and shale with a 3-foot porous lime section just below 5585 feet.

The casing was perforated from 5536 to 5575 feet and the well came in after swab was run three times. It had been intended to test the lower part of the porous section for presence of water mainly, but after the dry gas and no water appeared it was decided to take the well as a gasser. The well was allowed to produce several hours through tubing with pressure of 1750 pounds and 225 pounds pressure on casing, before being shut in.

Shreveport's second test to show a large amount of gas in the Tokio horizon almost got out of control last week at Rodessa Oil & Gas Company's Chandler 1, C SW NE 34-18n-14w, which while drilling at 2417 feet encountered an estimated 25 million cubic foot daily flow from this horizon. Immediately after this stratum was penetrated and the gas appeared, blow-out preventer was closed and the flow directed through the exhaust line. However, the valve on the exhaust line could not be closed due to high pressure, making it necessary to allow the flow to continue several hours until a new connection on the exhaust line could be installed and the well closed. This test is inside the city limits of Shreveport.

Several weeks ago R. L. Bauman's Slattery 1, C NW NW 35-18n-14w, had blown out at 2502 feet making estimated 10 million cubic feet, with drill stem still in the hole but was killed, drill stem cut out and the well is drilling ahead.

DeSoto Parish

Possibility of opening a new shallow field in a wildcat area of DeSoto Parish was seen in the testing of Samuel S. Alexander's Stell A-1, NE NE 5-12n-16w, that logged 50 feet of broken lime and sand showing oil from 2710 to 2760 feet. Following setting of 7-inch casing at top of this formation operators last week acidized the well which Thursday was making considerable oil and gas. Another acid treatment may be used. Location is 93 feet southeast of the same operator's Stell 1, which was drilled to 6002 feet and showed considerable oil in the Tokio as well as in the Glen Rose.

Another interesting development was logging of 6 feet of sand in the lower Marine series at 8504 to 8510 feet in Magnolia Petroleum Company's Pardee C-1, C NW NE 17-23n-11w, Webster Parish, geophysical prospect 3 miles north of the shallow Cartersville field. Operators were cutting another core Thursday before running formation tester or electrical log. The Travis Peak was logged at 6054 feet after a showing of oil in basal Glen Rose at 6025 feet where the well bailed dry. Elevation is 203 feet.

Arkansas Fuel Oil Company has made location in Section 4-16n-13w, Caddo Parish, for a 6000-foot test, and has let drilling contract to Sultana Drilling Company of Shreveport, on a block of several thousand acres assembled by M. W. Grimm and associates soon after the basal Glen Rose lime was found productive at Shreveport. This location is 10 miles southeast of the Shreveport field's two oil wells, and 4 miles south of F. W. Martin and Superior Oil Corporation's recently abandoned Andrew Querbes 1, Section 37-17n-13w, just south of the Shreveport city limits. Arkansas Fuel Oil Company's location, however, is believed to be on a separate structure.

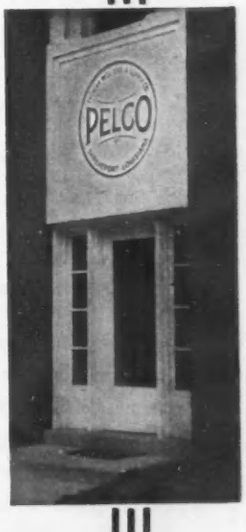
J. G. Sutton and associates have reworked Sabine Lumber Company 1, NE NE 23-7n-14w, Paluxy sand discovery well and lone producer from that horizon in the West Zwolle (Blue Lake) field, and recompleted it flowing 900 barrels daily through ⅜-inch choke. Since it came in from the 4208 foot level 5 months ago it had been producing through drill stem but

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Caddo (Shreveport)—		
R. E. Allison, State of La. 1, 28-14-18	¶50	5612

*Failures; †Junked; ¶Million cu. ft. gas.

Court in Session Thirty Years



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Magnolia—Houston

in the work-over the pipe, which was plugged with shale and paraffin, was perforated over a 5-foot section and the well recompleted flowing through 2½-inch tubing, with tubing pressure 350 pounds and casing, 500 pounds.

Mobile, Ala.—Seismic Explorations has moved a unit previously working near Jackson, Alabama, to Baldwin County, Alabama, to work in the vicinity of Bay Minette. A Mott-Smith unit is working near the intersection of Collier, Dade and Monroe Counties, Florida. Sun Oil Company's seismograph unit continues to work in Henry County, Florida, southwest of Lake Okeechobee.

Jackson, Miss.—Two locations were made last week in the Jackson field, both in Rankin County. Alexander-Hughes' Love Petroleum Company 1, SE NW 1-5n-1e, will test sands in the Wilcox for oil. The other location is Love Petroleum Company's Gulf States Creosoting Company 3, Section 36-5n-2e.

SOUTHEASTERN STATES
Completions

MISSISSIPPI

Company, Well and Location		Init. Prod. Bbls.	Depth
George (Wildcat)—			
Ryan & Anderson, J. J. Newman Lbr. Co. 2, 9-1s-8w	*		7043
Simpson—			
Goodwill O&G Co., R. T. Berry 1 33-2n-4e	*		2810

*Failures; †Junked; ¶Million cu. ft. gas.

Arkansas Fields

Schuler's second failure defines production west

El Dorado, Ark.—Producing limits of the Schuler field, Union County, were defined to the west last week as to the Jones sand (lower Marine) and Permian lime, when Crescent Drilling Company's Sewell 1, SWc NE NE 12-18-18, was abandoned at 7721 feet, having found no showings of commercial value in either horizon.

This was Schuler's second dry hole, producing limits having hitherto been defined only to the southwest. During last week the producing limits of Schuler were extended one-fourth mile west when Phillips Petroleum Company completed Bertha Bryan 1, NE SE 13-18-18, which with elevation of 229 feet topped the Jones sand at 7512 feet and the Permian lime at 7620 feet; perforations were made at 7559 to 7592 feet.

Standard Oil Company of Louisiana's Tina Crumpler 1, C SW NW 15-17-19, west offset to the discovery well at Village, Columbia County, which showed salt water when first completed in the Permian lime, was plugged back and recompleted as a gas-distillate well after perforations at 7393 to 7396 feet. It made four million cubic feet of gas and 198 barrels of 61.7 gravity distillate in 24 hours through 5/16-inch choke. The gas/oil ratio was 22,800 to one.

Three drilling permits were authorized last week by the Arkansas Board of Conservation, as follows: Miller County—F. W. Martin & Company, Watts 1, located 330 feet north and 335 feet west SEc SW NE 2-20-28; Union County—Edwin M. Jones, Murphy Land Company B-3, located 660 feet north and 330 east SWc SE NE 13-18-18; Lion Oil Refining Company, Dee 3, located 330 feet south and east NWc SW NW 17-18-17.

ARKANSAS
Completions

Company, Well and Location		Init. Prod. Bbls.	Depth
Union (Schuler)—			
Crescent Oil Co., Sewell 1, 12-18-18	*		7721
Phillips, Brian 1, 13-18-18		720	7681

*Failures; †Junked; ¶Million cu. ft. gas.

New Mexico Fields

Vacuum production extended to east and southeast

Hobbs, N. M.—Vacuum field registered major extensions to the east and southeast the past week, and accounted for 7 of the 12 new operations authorized for Lea County. Field work in the county has been above the normal summer level for three weeks, with a total of 40 locations staked.

One-mile east extension for the Vacuum field was provided by Phillips Petroleum Company's State-Santa Fe 11, C NE SW 26-17s-35e, which flowed 135 barrels of pipe line oil natural in 4 hours through open tubing from lime at 4210-4611 feet. It has an elevation of 3922 feet. The normal structural position of this outpost paves the way for additional extensions. Cities Service Oil Company's State 1-K, C SW NE 27-17s-35e, which has shortened the interval between the above well and the field proper, averaged 25 barrels hourly for 21 hours through ¾-inch tubing choke natural from lime at 4430-4625 feet. Top of Yates was called at 2900 feet, with an elevation of 3944 feet. Cities Service Oil Company's State 1-L, C SE SW 15-17s-35e, has rigged up to drill one mile northeast of production.

Shell Petroleum Corporation's State 1-U, C NE NW 3-18s-35e, 1¼ miles south of nearest production and a southeast extension, recorded a low structural position in logging oil saturation at 4850-4900 feet, with an elevation of 3937 feet. The well swabbed 1½ to 2 barrels oil hourly before using acid, then doubled its yield on swab. It is scheduled to be re-acidized. The company has started operations on State 1-N, C NW NE 28-17s-35e, and State 1-O, C SE NE 34-17s-34e. The Texas Company has added two new operations, involving State 1-W, C SW SE 13-17s-34e, and State 2-L, C NE NE 1-18s-34e, drilling at 1040 feet and 575 feet, respectively. Magnolia Petroleum Company has rigged up for State-Bridges 18, C SE NW 24-17s-34e, and Devonian Oil Company, a new entrant, made location for State-Ritts 1, C NW NW 21-17s-34e, offsetting the most westerly producer.

Helmerich-Payne-Continental Oil Company's State 1-G-36, southeast out-

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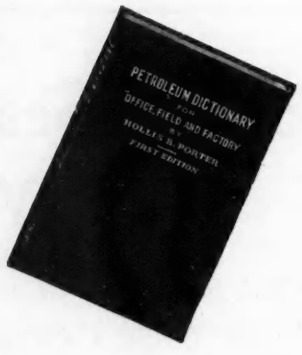

This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936 and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.

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post for the Vacuum area, filled 250 feet with oil in 4 hours when swabbed down, with the hole bottomed at 4950 feet, or 1047 feet sub sea. It is below the normal water level of the Vacuum area.

Westmount Oil Company's State-Amerada, 1, C NW NE 12-17s-36e, Lea County wildcat situated 7 miles southeast of Lovington, logged top of anhydrite at 1890 feet and first salt at 1995 feet, with an elevation of 3830 feet, and was drilling at 2450 feet. It is credited with being slightly higher structurally than dry holes in the general area. The Texas Company's Lodewick 1, C SW SE 34-18s-33e, western Lea County wildcat and 4¼ miles south by east of the company's recently completed wildcat pumper, logged top of anhydrite at 1390 feet with an elevation of 3759 feet. Electrical formation survey was made of the hole before running 7-inch pipe at 3885 feet. It is scheduled to change to cable tools.

F. C. Wilson et al's State 1, C SW NE 7-21s-35e, located ⅞-mile southwest of an abandoned wildcat oil producer, swabbed 250 barrels oil in 12 hours through tubing after 100-quart nitro shot at 3773-3813 feet, and is equipping to pump. The performance of this well will result in more drilling for the area. Emperor Oil Company's State-Humble 1, located 2 miles northwest of the abandoned wildcat depleted oil well, encountered sulphur water in lime at 4085-98 feet, with an elevation of 3660 feet, and was abandoned at 4109 feet.

The sandy-lime fields in the east portion of Lea County accounted for 5 new operations. In the Penrose area, Twin Oil Corporation's State 1-B, C NW NE 17-22s-37e, was drilling below 500 feet, and Lem Peters et al's L. J. May-Gulf 3, C NE SE 27-22s-37e, is rigging up standard tools. Skelly Oil Company's H. O. Sims 4, C NW NW 3-23s-37e, is a new location for the Skelly field.

The Texas Company's Fanning 2, C NW NE 4-24s-37e, Mattix area, flowed 46 barrels of oil and 500,000 feet of gas initial after 280-quart shot at 3510-3605 feet. Great Western Producers, Inc.'s State-Leonard-Gulf 2-B, C NW NW 32-23s-37e, is a new location for the north end of the same area. Anderson-Prichard Oil Corporation's Harrison-Carlson 4, NE SE NE 27-25s-37e, Langlie field, was drilling at 1200 feet.

Texas Pacific Coal & Oil Company's State 6-A, lease 1, SW SE NW 21-23s-36e, half mile east of the discovery oil well of the Lynn pool, failed to attained water shutoff in plugging back from 3686 feet, or 256 feet sub sea, to 3668 feet. The well has been temporarily completed to qualify for a proration allowable with a natural flow of 167 barrels of fluid initial, testing 40 percent bs&w. It is making water from a higher structural position than the oil zone logged by wells to the west and north.

Shell Petroleum Corporation's Geo. Harwood 1, C S½ SE SE 27-7s-35e, south central Roosevelt County geophysical prospect, logged top of anhydrite at 2085 feet, with an elevation of 4200 feet, and cemented 10¾-inch pipe at 2530 feet. It is slated to be carried to a record depth level for the north portion of the Permian basin.

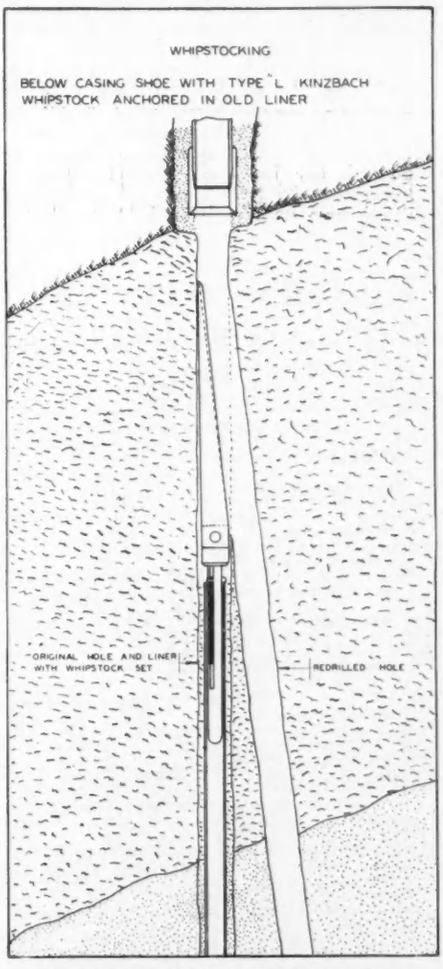
Ohio Oil Company's Wills 1, C NE NW 35-26s-37e, southeastern Lea County wildcat near the Texas border, logged saturation in drilling to 3309 feet, with an elevation of 2994 feet, and is scheduled for a nitro shot.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Rio Arriba County—		
Axeland Oil Co., Fee 1, se se ne 13-32n-1-e	*	1022
Lea County (Hardy)—		
Menke et al, Alexander-Texas Co. 1, lot 12, 5-21s-37e	240	3791
Lea County (Langlie)—		
Stanolind, Langlie 5-B, c se se 9-25s-37e	*	3732
Texas Co., C. C. Fristoe 5, nw se se 3-25s-37e	1008	3480
Lea County (Lynn)—		
T. P. Coal & Oil Co., State 6-A, sw se nw 21-23s-36e	93	3686
Lea County (Mattix)—		
Texas Co., Fanning 2, c nw ne 4-24s-37e	46	3605
Lea County (Penrose)—		
Parker Drl. Co., State-Texas Co. 1-A, c sw sw 21-22s-37e	67	3665
Peters et al, Coll 1, nw sw sw 26-22s-37e	150	3685
May-Gulf 4, sw se ne 27-22s-37e	768	3653
Lea County (Vacuum)—		
Shell, State 1-F, c sw sw 29-17s-35e	408	4700
Standard, State 1-4, c ne sw 27-17s-35e	792	4590
Lea County (Wildcat)—		
Emperor Oil Co., State-Humble 1, c se sw 36-20s-35e	*	4109

*Failures; †Junked; ¶Million cu. ft. gas.

RE-DRILL BELOW CASING SEAT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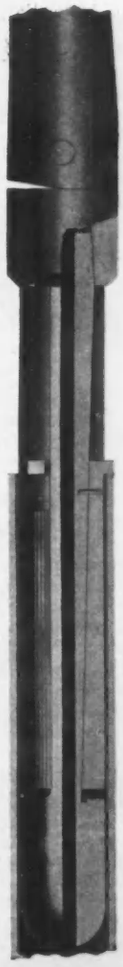

Sketch, above left, presents example. Right: Close-up of anchor section of Type "L" Whipstock.

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KINZBACH

Eastern States

More extensions of production recorded in Kentucky.

Move in to test blocks in Evansville, Indiana, area.

Pittsburgh.—Closely watched as a possible McClosky lime pool opener, Compton & Ashby's A. R. Cummings 1, 2 miles east of Morton's Gap, Hopkins County, Kentucky, encountered an oil show at 2100 feet October 17. The test was started October 6 with a rotary rig by Fitzpatrick & Hayes, contractors.

A. C. R. Drilling Company was preparing to core R. L. Logsdon 1, ¾ mile southeast of Stanley, Daviess County, Kentucky, into the McClosky below 1750 feet after drilling through excellent saturation in the Jones sand at 1348 feet. If successfully completed in the McClosky, it will extend the Birk City field of Henderson and Daviess Counties about 2 miles to the north. About ¾-mile farther north, Major Oil Company's Mulligan 1 was setting casing at 1600 feet, the Barlow sand. It is being drilled with cable tools.

Magnolia Petroleum Company's S. L. Green 1, on the Spottsville dome, southwest of Spottsville, Henderson County, Kentucky, was cementing to shut off water at 2100 feet. The wildcat indicated another pool a week ago when a Cunningham sand saturation indicating 50 barrels daily production was encountered at 2000 feet. It is being drilled to the McClosky, expected in another 100 feet.

Bur-Kan Petroleum Company, which has been active during the past year in Illinois fields, is preparing to start a wildcat on Henry P. Barret's Green farm, 4 miles south of Henderson, Henderson County.

Indiana

In Vanderburgh County, Indiana, 7 miles northeast of Evansville, Sun Oil Company moved in a derrick for a wildcat test on the Ernest Bosse farm, near Daylight. Large blocks of acreage in the area are held by both Carter Oil Company and Gulf Oil Corporation. Sun Oil Company has moved in equipment for W. W. Gray 2, Section 20-8s-14w, Point Township, Posey County. It was taken from the company's M. Murphy 1, Section 28-8s-14w, which was drilled to 2300 feet without success. Disposition of Murphy 1 has not been announced.

Frank Damron et al's A. W. Haines 1, Section 34-7n-6w, Ohio Township, Spencer County, Indiana, was drilling at 900 feet. The wildcat is commanding more than usual interest. Leases are reported taken on all farms in Ohio and Luce Townships, with Damron and the Gulf Oil Corporation holding the largest number.

In the 50-year-old Harvey field of Center Township, Green County, Pennsylvania, the No. 6 on the Weir lease was drilled in and produced 250 barrels during the first 24 hours. It ranks among the largest wells in this region.

On the Empire State side of the New York-Pennsylvania deep sand and gas fields. Cunningham Natural Gas Company's Hilligas 2, Willing Township, Allegany County, gauged 11,000,000 cubic feet with an initial rock pressure of 1905 pounds per square inch from the Oriskany. The sand was topped at 4924 feet, first gas encountered at 4926 feet and the hole was bottomed at 4928 feet. It is one of the best wells drilled in this township.

Eastern States completed operations dropped sharply in Ohio last week, remained constant in Pennsylvania and gained only slightly in Kentucky and West Virginia. Ohio completed wells dropped 11 to 9, the past week's lot including 5 oil wells averaging 7 barrels initial production and 4 gas wells. Pennsylvania's three completions in outlying districts included 2 gas wells and a dry hole. West Virginia gained 1 to 14, which included 2 small oil wells, 10 gas wells and 2 dry holes. In Kentucky, a gain of 3 to 25 was reported, the lot including 11 oil wells averaging 75 barrels initial daily production, 3 gas wells and 11 dry holes.

EASTERN FIELDS
Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
Coshocton County—		
McCord et al, Lewis 4	3	1127
Licking County—		
Strickler et al, Davis 1	10	660
Rutledge & Mosholder, Keaser 1	¶	886
Medina County—		
Curtis & Eaken, Clifford 19	12	429
Morgan County—		
Orndoff, Boileau 3	¶.10	1567
Summit County—		
East Ohio Gas Co., Wolf 1	¶.30	4012
Washington County—		
Hall & Henning, McKee 6	5	1436
Koon Run Oil Co., King 3	4	1357
Reno Oil Co., Hall 1	¶.24	1625

PENNSYLVANIA

Greene County—		
Equitable Gas Co., Huffman 1	¶.10	3366
W. L. Walters, Burnfield 1	•	3085
Washington County—		
Sugar Run O&G Co., Williams 1	¶	2756
Bradford District		
Mix Creek Oil Co., Fee	1	....
Victory Oil Co., Wright	3	....
Andrus & MasDowell, 329 Bing	2	....
Alice Freeman et al, M. Wixon & Co.	1	....
Forest Oil Corp., 3 wells	3	....
Niagara Oil Corp., 2 wells	2	....
Bradford Transit Co., 11 wells	11	....
Bradford: Water (Pressure) Wells		
Forest Oil Corp.	...	....
Niagara Oil Corp.	...	....
Butler-Armstrong District		
A. N. Smith et al, H. B. Zensen	10	....
Willis M. Ruby, Daniel Shaner	1	....
Middle District		
Lamberton Nat'l Bank, James Bleakley	¼	....
Viola E. McRae et al, Foster Farm Oil Co.	1	....
C. L. Irwin, Harriet & Laura B. Cross	1	....
New York-Pennsylvania: Gas Fields		
G. L. Cabot, Inc., Gibson	¶	....
New Penn Development Corp., Haupt	•	....

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
Cabel County—		
Shale O&G Co., Conner 1	¶.12	3748
Gilmer County—		
W. E. McKnight, Griffith et al 1	¶.22	1117
C. F. Wilson, Campbell 1	¶.15	1675
Harrison County—		
Carnegie Nat. Gas Co., Heldreth 2	¶.26	2689
Kanawha County—		
United F. G. Co., Good 4797	¶10.25	5056
Milan 4799	¶8.70	5076
Marshall County—		
Fauber & Henry, Henry 1	¶.25	1157
Pleasants County—		
B. C. Deem, Jr., Fee 1	5	1935
Ritchie County—		
Bickel, Fluharty 1	1	2161
Clifton Loudin O&G Co., Nay 5	¶.25	2083
Tri-County Producing Co., Bell 1	¶.20	2300
Tyler County—		
J. E. Haupt, Thorn 1	•	784
Wetzel County—		
Carnegie Nat. Gas Co., Simmons 1	¶.03	3415
Wirt County—		
Glen W. Roberts, McConaughey 9	•	1750

KENTUCKY

Breckenridge County—		
Cooper et al, Moorman 2	5	227
Butler County—		
Cumberland Pet. Co. et al, Harper 5	20	497
Breslin et al, Porter Harper 1	•	335
Daviess County—		
Aetna Oil Service Co., Morrison 3	300	1888
Bailey, Bond et al, Hagen 2	200	....
Ashby et al, Jagoe 2	200	1890
Boling & Moore, Hinton 1	•	955
Richards et al, Shiveley 1	•	644
Hupp et al, W. R. Jones 4	•	....
Carpenter et al, Lytel 1	•	1900
Floyd County—		
Warfield Gas Co., Runyon 4810	¶	1510
Hancock County—		
Eureka Dr. Co., Baker Bros. 2	•	....
Chester Oil Co., Fuqua 8	•	279
Henderson County—		
Carter, Dempewolf 5	•	1888
Knott County—		
Inland Gas Corp., Adams 202	¶.96	3078
Lee County—		
Snowden, Snowden 1	2	930
McLean County—		
South Penn Oil Co., Nall 7	30	1450
Martin County—		
Virginian G&O Co., Fee 4V-1268	¶.35	1497
Diedrich, Pauly 6	10	1450
Muhlenberg County—		
South Penn Oil Co., Rogers-Crescent Coal Co. 3	•	3987
Ohio County—		
Lang & Lewis, Westerfield 2	50	672
Nollem O&G Co., Crow 10	5	706
New Deal Oil Co., Seaton 2	•	371
E. J. Corliss, Bartlett 4	•	452
Powell County—		
South Penn Oil Co., McCoy 26	3	....

INDIANA

Blackford County—		
John C. Cooley, Cooley 1	¶	936
Clay County—		
Sage et al, Denehie 1	•	1500
Daviess County—		
Ben B. Ruble, Walker 1	12	616
Inkillky Oil Co., Chapman 1	•	1292
Decatur County—		
Hoosier Public Utility Co., Harpring 201	¶	939
Gibson County—		
Chas. D. Stroble, Harris & Barr 13	9	881
Harrison County—		
Indiana Utilities Corp., Conrad 1	¶	760
Huntington County—		
Edgar Hays, Wiley 7	12	991
Knox County—		
O. A. Thayer, Cowles 4	¶	807
Perry County—		
A. J. Wedeking, Delaisse 7	¶	519
Chas. E. Dice, Dixon 8	•	336
Chas. E. Wyman, Frakes 1	•	318
Pike County—		
Murphy Oil Co., Stewart 1-30B	17	990
Claude L. Trusler, Barrett 1	•	1375
Posey County—		
Sun Oil Co., Heil 1	40	1811
Renwick Properties, Inc. 1	27	1785
Carter Oil Co., Graulich 1	•	5035
Randolph County—		
Sim B. Hood, Stotler 1	•	....
Rush County—		
Knightstown Nat. Gas Co., Williams 1	¶	902
Shelby County—		
R. E. Haymond, Haymond 1	¶	841
J. H. Snider, Bennett 1	•	962
Spencer County—		
Troy Ref. Co., Anderson 1	12	734
Sullivan County—		
A. R. McLennan, Osburn 1	17	1597
Niagara Oil Corp., Blount 11	12	765
C. C. Davis, Huff 1	¶	722
Curts & Stroble, Dix 1	¶	799
Big Four O&G Co., Ogle 1	¶	790
Vigo County—		
Carter, Turner 1	78	2164

•Failures; †Junked; ¶Million cu. ft. gas.

Illinois Developments

Lake Centralia production moves another 2 miles north.

Fayette failure on south marks field as 19 miles long.

Olney, Ill.—The Lake Centralia field of Marion County was extended 2½ miles north last week when Lewis, Redwine & Frost's M. Pruden 1, Section 10-2n-2e, 1 mile west of Salem, cored 7 feet of Benoist saturation from 1971 to 1978 feet. Casing was set to top of saturation and a spudding machine was moved in. The well may be carried to the McClosky after a test of the Benoist is made, as at several points in this field both formations are productive.

Completion of the test will make the field 7 miles north and south and nearly 3 miles east and west. A surge of development activity is expected during the coming weeks in the area between the outpost and the pool proper, with additional drilling promised between the Pruden well and Salem where leases have been taken on many town-lot sites. An ordinance regulating townsite drilling was passed in that city several weeks ago, patterned after that enacted by Centralia, first city in the Illinois basin to become an oil field during the current boom.

Meanwhile, attention is centered on W. S. Tatum's Bachman 1, Section 5-2n-2e, Salem Township, 1 mile north and west of the Pruden test, which was drilling at 500 feet at last report. Magnolia Petroleum Company last week challenged The Texas Company as leader in development in this field, having 35 tests underway at one time compared to The Texas Company's 37. Much of the acreage around the Pruden well is held by the Magnolia Company.

The state's largest gas well was completed last week in Lawrence County. It is B. B. B. Oil & Gas Company's L. Haughton 2, Section 12-4n-11w, Russell Township, which had an initial open flow of 6,286,000 cubic feet a day from the Buchanan sand, topped at 1088 feet. Bottom is at 1091 feet. The rig is being moved to SE SW 12-4n-11e for a test for A. A. A. Oil & Gas Company. With three wells turned into the line, the area promises an important addition to gas reserves east of the Mississippi.

The Illinois State Geological Survey last week reported that 199 producing wells were completed during September, bringing the number of wells in new fields of the state to 1180. September production from these wells was given at 2,055,000 barrels, while wells in new fields are credited with producing 10,494,000 barrels of oil since January, 1937.

The survey's records show 474 producing wells operating in the Centralia field at the end of September, more than twice as many producers as any other field. There were 129 wells in the Beecher City pool, 112 at Patoka, 31 at Bartelso, 168 at Clay City, 145 at Noble, 18 at Olney, 23 at Dix, 4 at Flora, 45 at Lake Centralia, 8 at North Aden, 1 at Leech Township, 3 at Aden, 5 at Schnell, 12 at Sisne and 1 at Rinard.

Favette County led the Basin in the number of producing wells with 63, with 42 producers completed in Clinton County, 47 in Marion County, 23 in Clay County, 11 in Wayne County, 6 in Richland County and 1 in McDonough County.

The southwest boundary of the Favette County field was apparently defined last week when Johnson et al's Bank 1, Section 26-6n-2e, had a dry Benoist at 1784-1806 feet. The hole was bottomed at 1821 feet. Interest has shifted to the east side of Otego Township, as attempts are made to find the potentially productive part of the southern part of the pool. Continued development in this area has revealed the pool to be more and more erratic, as successful completions are made in sections believed dry and dry holes are drilled in sections thought productive.

The field is now 19 miles in length,

ILLINOIS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
Fell Oil Trust, Adolf 1	*	573
Clay County—		
Wiser Oil Co., Daly 2	120	3078
Pure Oil Co., Travis 1	453	3030
E. E. Weiler 6	497	3028
J. E. Moseley 1B	329	3020
Tetrick Consolidated 1	940	3042
H. Scrugham 5	556	3040
J. Nelom 3	259	3055
J. Ullom 2	875	3050
J. E. Moseley 5A	213	3055
Daisy Bunn 1B	508	3050
Clinton County—		
Shell Petroleum Corp., F. Hanseman 2	30	1350
Criley 6	138	1368
Francis 1	6	1364
Allison 2B	78	1377
Gulf Refining Co., Buehler 3C	64	1372
Adams Oil & Gas Co., E. Felton 5	62	1354
Lucas et al, Ross 1	85	1378
W. C. McBride, Inc., Allison 4	88	1385
Hardy et al, Ross 1	180	1389
Jack Greer, R. Leber 1	50	1378
J. F. Ryan, Brinkman 2	30	1225
Linier of Louisiana, Penzau 1	*	1378
Pace & German, Witcher 1	75	1384
Bert Fields, M. & I. R. R. 6	180	1375
H. Schmisseur, C. Beechman 1	60	1393
W. B. Smith, Shaw 2	180	1382
Ryan & Anderson, Koelling 1	40	1383
Rockwood et al, B. Warren 1	75	1382
Magic Oil Co., Home Loan 1	*	1428
Quinsberry, Burroughs 1	30	1388
Snowden, Mifflin 1	85	1383
Milhahn, Bogard 1	12	1383
McArdle, H. Bierman 1	18	1386
W. H. Nichols, Dennis 1	75	1385
Iroquois Oil & Gas Co., Rogers 1	50	1389
Crawford County—		
Kentucky Natural Gas Corp., Beckes 1	*	1450
Edgar County—		
J. W. Stipes et al, Wilhoit 1	*	1000
Fayette County—		
Rosenthal, Washburn 1	188	1622
Whisenant et al, Rexwinkle 1	*	1810
Ray Brown, Hopper 2	200	1518
Hopper 3	180	1550
Ruwaldt & Johnson, Turner 1	*	1800
Kingwood Oil Co., J. Smith 1	190	1573
J. Smith 2	104	1565
J. Smith 3	110	1570
Carter Oil Co., I. Hobbs 1	610	1528

*Failures; †Junked; ‡Million cu. ft. gas.

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starting with Carter Oil Company's M. Miller 1 in Section 12-8n-3e and extending southwesterly across Loudon Township in a 3½ mile strip with production in much of the area from both the Stein and Benoist sands. Dry holes indicate the pool to be very narrow from southwest Loudon Township, running straight south taking strips of Sefton Township and Avena Township. At Section 19 in Avena Township, it runs southeast with production only from the Stein sand. In the east part of Avena Township, production is also irregular, coming from the Stein sand with two wells producing from a stray sand below the Benoist. There is a 5½-mile unproven area in the south end of the field with tests underway to determine its course.

In the new Cypress sand pool of Richland County, opened two weeks ago by Pure Oil Company's F. Wakefield 1, Section 26-4n-9e, Noble Township, the company has announced a policy of making 10-acre rather than 20-acre locations as has been done in limestone areas in this and neighboring counties. The company's H. Cazel 1, Section 23-4n-9e, offsetting the discovery, was drilling at 850 feet last week.

In Saline County, Dr. I. W. Sigel et al's D. Choisser 1, Section 5-8s-7e, Eldorado Township, topped the Petro sand at 1092 feet and had saturation described as capable of producing from 50 to 100 barrels a day. Now at 1115 feet, it may be carried to the Benoist and McClosky and if these formations are not more productive, will be plugged back to the Petro.

Helmerich & Payne, one of the most active contracting firms in the Basin, have entered into a contract with Ed Robinson, Centralia operator, to drill 5 wells on a 40-acre block ½ mile east of production in the Lake Centralia field. The drilling firm will be associated with Robinson in ownership of the wells, which will be on the Anderson farm in Section 34-2n-2e.

In the Big Mound Township pool of Wayne County, H. H. Weinert, Inc.'s Dr. I. Morlan B-4, Section 33-2s-7e, started flowing at the rate of 4000 barrels a day, giving this lease the three largest wells completed thus far in the Illinois basin. Production is from the McClosky lime, found below 3300 feet in this area.

Michigan Fields

Bloomingdale boom has chance for 100 wells on 80 acres.

Van Horn pool extension tests showing as producers.

Mt. Pleasant, Mich. — Thirty-six spudders and drilling machines and one standard rig and cable tool job were active in the Bloomingdale townsite boom Van Buren County this week in Michigan's biggest lot drilling spree in history. The lot drilling was given impetus when D. A. Burris' Danes 1, NW NE SW, Section 16-1s-14w, located in the approximate center of the village, developed estimated 300-barrel production following acid treatment in Traverse limestone.

The Burris well was the second commercial producer on a lot in Bloomingdale and appeared to define about 80 acres of lots for development. Dry holes already have been drilled south and east of the Burris producer.

The probability that restrictions on storage in the village and 50-cent oil so far has had no effect on the campaign. All drilling is being handled by independents. As the townsite play is shaping up approximately 100 tests will be drilled on an area of 80 acres.

Reputable petroleum geologists estimate that a minimum of a half million dollars will be lost in the play if the present price of 87 cents stands up and this is doubtful. In fact, numerous deals were reported this week for sales from potential townlot production ranging as low as 45 cents per barrel.

Geologists estimate at the best recovery will do well to reach 7500 barrels per acre. From 2,000 to 4,500 barrels recovery represents the average for other districts having similar production characteristics. The average cost of a well on a townlot is $7,500 to $8,500 not including possible added cost for piping production to storage outside the village limits, lease or overrides.

The village council place in effect a rule requiring a $25 per well permit fee (besides the state fee of equal amount) and necessity of a special permit to drill closer than 200 feet from a building. The State Conservation Department is requiring that wells be drilled into the producing horizon either under pressure or that tools be left in the hole until after production heads up.

Holders of lots are asking from $3,000 up, starting of a well within 15 days, and a minimum of a one-third override. Although such deals repeatedly have been branded as "preposterous" many on this basis, or tougher were put through.

Slow in Other Districts

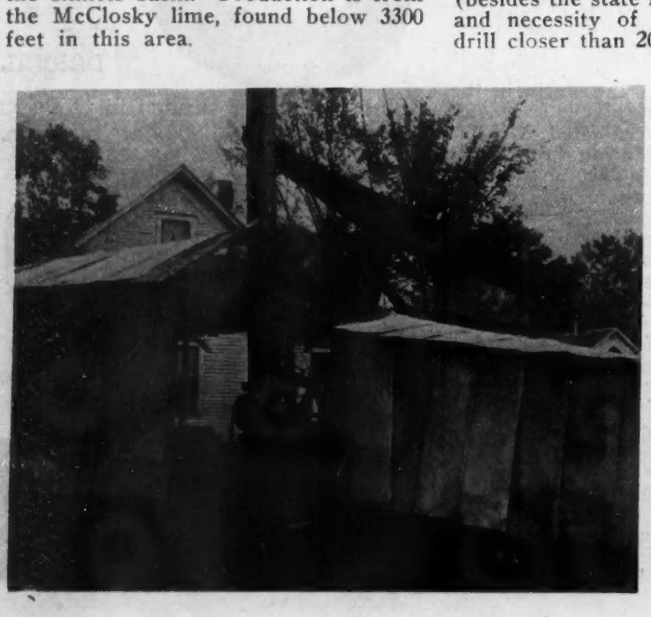
Hard hit by proration and price cuts, all districts in Southwestern Michigan except the townsite boom, have declined considerably in activity. Agressive drilling in both the Overisel-Oldebekking and Diamond Springs pools has been halted.

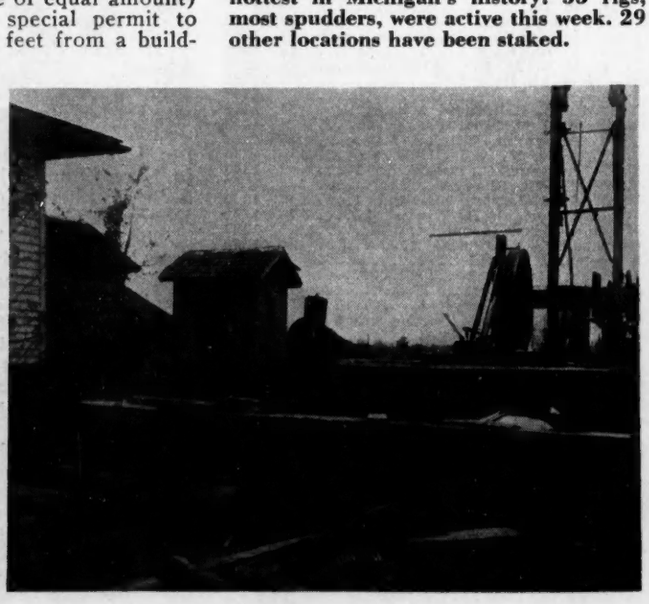
Current postings for Southwestern Michigan grades of crudes are 87 cents per barrel. This price was posted Friday, October 14, a 13-cent drop, 36 hours after cuts from 10 to 13 cents were posted for Central Michigan grades. About 8,200 barrels of the Traverse limestone crude is being marketed at this price. An estimated 1500 to 2500 barrels is being marketed from 10 to 20 cents under.

Two new districts in Southwestern

Pictures:

Typical views of the townsite drilling locations in Bloomingdale, Mich., where about 80 acres of townlots already are proven for production in a 1230-1245-foot Traverse limestone horizon. First two town-lot wells had initials following acid treatment ranging up to 450 barrels per day. Although geologists agree that if the expected 100 to 150 townlot tests are drilled a minimum of a half million dollars will be lost, the lot boom is the hottest in Michigan's history. 35 rigs, most spudders, were active this week. 29 other locations have been staked.





Michigan are showing favorable possibilities. In Barry County, Collin and Sopers' Simmons 1, Section 3-4n-10w, was shut down after testing 900 feet of oil in the hole at 1940 feet. In Kent County, MacCullum & Herr's Story 1, Section 32-7n-12w, also is testing Traverse saturation at 1992 feet.

Extensions which should give the Van Horn pool, Clare County, in the central part of the basin, a 2½-mile northwest - southeast breadth, were showing gas and/or oil this week but commercial production had not been definitely established. McClanahan Oil Company's State 1, SE NW SW, Section 33-19n-6w, three quarters of a mile northwest of developed Monroe lime production, drilled Monroe top at 3877 feet and showed considerable gas at 3889 feet, where a fishing job developed and after three days had not been cleaned up.

Southeast of developed production about a half mile, Mammoth Producing & Refining Corporation's Van Horn 1, Section 2, drilled Monroe top at 3902 feet and logged a hole full of oil at 3909½ feet, where drilling was suspended for acid treatment.

Upsetting the geological applecart for the play, however, was the failure of Pure Oil Company's Drake 1, Section 4-18n-6w, only two locations southwest of production. It drilled to 3921 feet, 42 feet in the lime.

Gulf Refining Company has definitely decided to contract with Parker Drilling Company for a complete rotary hole in the Van Horn pool, approximately 3900 feet. Deepest rotary hole in Michigan was drilled by Taggart Brothers in 1935 to 2770 feet, when progress become too slow to warrant continuing. Parker Drilling Company is completing the second 1800-foot rotary hole for Gulf Refining Company in the Clare field. The company plans to drill the glacial drift section, about 650 feet, with 11¼ inch hole and then reduce to 10-inch and complete to the 5-inch producing string casing point, drilling in with a spudder.

MICHIGAN
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
J. B. Northcott, Herriman 1, sw sw nw 34-1n-14w	*	lcn.
Crown Dev. Co., Shields 3, nw se sw 30-4n-12w	300	1578
Gordon Oil Co., Groenheide 2, sw sw ne 1-3n-14w	800	1476
Fortney Oil Co., Wesseling 6, sw ne ne 1-3n-14w	400	1458
Wesseling 8, nw sw ne 1-3n-14w.	90	1479
Haze & McGill, Slenk 1, ne se se 13-4n-16w	*	1570
W. L. Harvey, Bek 1, nw nw ne 4-3n-13w	*	1715
Lima Oil Corp., Aldrich 1, nw nw sw 6-3n-13w	25	1479
Stewart & White, Oldebekking 5, se se se 21-4n-14w	510	1475
Spencer Cook, Rigterink 2, se sw nw 22-4n-14w	300	1479
Muskegon Dev. Co., Berens 4, nw nw se 36-4n-14w	590	1470
Fred W. Gilde, Buyers 1, nw nw sw 29-4n-13w	*	1695
Clare County—		
Pure, Drake 1, ne ne se 4-18n-6w..	*	3921
Basin Oil Co., Van Horn 3, se ne ne 4-18n-6w	2400	3891
Gladwin County—		
Ralph LaBlanc, Campbell 3, nw se ne 12-18n-1w	95	3635
Sun, Reid 1, se se sw 18-19n-2w...	*	3943
Gratiot County—		
Chartiers Oil Co., Duflo 1, se se nw 6-9n-3w	*	3225
Isabella County—		
Keeler & Chatham, Stevens 1, sw sw nw 13-16n-6w	*	4035
Missaukee County—		
C. W. Teater, Campbell 1, ne sw sw 10-22n-5w	*	1323
Roscommon County—		
V. R. D. Kirkham, Miller 2, nw ne nw 6-22n-2w	*	4073
Van Buren County—		
Leighton Oil Co., Cook 1, ne nw sw 16-1s-14w	*	1247
D. A. Burris, Danes 1, nw ne sw 16-1s-14w	300	1240
H. R. Allen, Kent 1, ne ne sw 16-1s-14w	*	1290
T. F. Caldwell, Ruth 1, ne ne ne 20-1s-14w	*	1265

*Failures; †Junked; ¶Million cu. ft. gas.

Houston Texaco circle holds annual banquet

The Texaco Circle of Houston, whose membership is limited to young men employed by The Texas Company in the Houston office building, held its annual banquet last Wednesday evening with about 250 members present.

The crowd assembled early for a general get together with music and songs. Captain A. A. Nicholson, manager of the personnel department of The Texas Company, New York, was an unexpetced guest and made a short talk commending the organization. J. S. Leach, vice president, Houston, and other officials of The Texas Company also made short talks before the dinner, but there were no addresses.

The new officers for the organization were introduced. Fred Rousseaux is chairman; J. A. Mugg, vice chairman; Robert T. Wilson, secretary; C. J. White, treasurer. The board of governors includes J. Hess, J. D. Roensch, V. W. Lacey, H. R. Schmidt and David S. Donoghue. After a floor show the banquet came to a close.

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Rocky Mountain Fields

Two important wildcat tests started in Lance Creek area. Dry Piney test that blew out going into Second Frontier.

Casper, Wyo.—Two important wildcats are scheduled for the district southeast of Lance Creek field in eastern Wyoming. In the Magoon area where geologists have detailed a well defined surface structure, Cow Gulch Oil Company has let contract for a cable tool test to 2100 feet to the Leo sand. On the Hat Creek structure, 10 miles east of Lance Creek, Ohio Oil Company's Jones 1, SE NE SE 30-35n-62w, is waiting on cement to set around the 10-inch at 155 feet with total depth at 205 feet.

Cow Gulch Oil Company, which holds producing leases in the Lance Creek field which are being operated by Ohio Oil Company under a 60-40 agreement, has made location for William Magoon 1, CNE NE SW 33-35n-64w. Surface formation is the Dakota formation. As well as the Minnelusa series, the test will have the Sundance sand as objective at a shallow depth.

The Hat Creek test is on a federal permit and has Dakota and Sundance formations as objectives. The well has until December 31 of this year to bring in commercial production to qualify the permit for exchange for preferential acreage carrying low royalty under the leasing law. It is expected that several other tests as validating holes will start in widely scattered areas to protect permits on likely structures in the Rocky Mountain area.

The Texas Company this week consummated a deal in which it took over the entire holdings of Frontier Petroleum Corporation on the Dry Piney structure, Sublette County, southwestern Wyoming. The past week, Frontier Petroleum Corporation's Government 1, SE SE SW 1-28n-114w, had a gas blowout estimated from 20 to 50 million cubic feet daily in the First Frontier sand at 5902 feet. After partially killing the well with mud, The Texas Company gauged the flow cutting through the mud at 3,250,000 cubic feet daily. The flow then was entirely killed. Heavier rotary equipment was installed and coring below 5978 feet in the Second Frontier sand is under way. Frontier Petroleum Corporation, held a 10,000-acre block embracing the Dry Piney structure. The Ohio Oil Company, The California Company, and The Texas Company, carried out extensive geophysical surveys in the Upper Green River Basin two summers ago, of which Dry Piney is surface structure, and the gas strike is expected to stimulate further prospecting in this area.

Two outside locations both on the southwest side of the Lance Creek field were nearing critical depths at the close of the week. Mackinnie Oil & Drilling Company's Thompson 4, SE SW NE 7-35n-65w, is drilling the Minnekahta lime at 4867 feet. Continental Oil Company's No. 1-B Dielman, NW SE NE 7-35n-65w, is drilling at 5112 feet in dolomite and anhydrite.

The Ohio Oil Company's Elizabeth Lamb 11-Account 2, SW SE SE 5-35n-65w, on the south side of the field, is a near completion, waiting on cement to set around 7-inch at 5450 feet. Hole bottoms at 5542 feet with the Leo sand saturation topped at 5461 feet. The well had the top of the Converse at 4925 feet, first sand in the Minnelusa series.

General Petroleum Corporation's State 1, NW NE SE 16-35n-77w, a mile north of the first well on the Cole Creek structure, 16 miles northeast of Casper, is drilling at 5620 feet and is about 1400 feet from its major objective the Wall Creek series. The well showed 17 stands of mud from the Shannon sand at 4625 to 4725 feet.

ROCKY MOUNTAIN
Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
Glacier (Cut Bank)—		
Par Oil Co., Tribal 1, sw nw sw 7-32n-5w	177	2801
Lawlor-Hoerr, Harlan 3, sw sw 3-35n-5w	155	2779
Glacier Prod. Co., State-Unit 1, sw se nw 16-34n-5w	¶22½	2645
Mather Unit 1, swc ne sw 36-25n-5w	2	2582
Yellowstone—		
Wyomount Pet. Co., Sayre 3, cse sw 23-6s-19e	100	979

WYOMING

Carbon—		
Cunningham Oil Co., Union Pacific 1, se nw sw 7-23n-78w	*	855
Weston (Osage Field)—		
Hugh Updike, Fee 1, cel nw se 15-46n-64w	50	2240
Osage Trust, Fee 36, csl 18-46n-63w	*	750

*Failures; †Junked; ¶Million cu. ft. gas.

Hope for resumption of North Dakota drilling

Williston, N. D.—Big Viking Oil Company, holder of leases on about 3000 acres on the Nesson flats structure, Williams County, last week took steps to renew the leases on the assumption that exploratory activities of The California Company are being only temporarily dropped.

No official statement concerning future drilling has been made by The California Company, although it is rumored that two additional tests will be drilled next year. Much of the equipment used for the company's Nels Kamp 1 wildcat, abandoned several weeks ago because of mechanical difficulties below the 10,000-foot mark, has been stored near the location.

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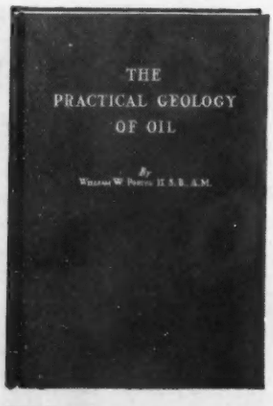

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IMPORTANT WILDCAT TESTS

ALABAMA

Barbour—H. A. Stebbinger's Mrs. Alyce Robertson 1, ne ne 19-10-26, rur. **Choctaw**—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, owdd, td 7520 ft. **Greene**—R. T. Jeffrey's R. C. Lett 1, 3-20n-2e, sd 720 ft. **Lawrence**—Mid-Southern Pet. Co.'s Rob Jacobs 1, sw se 11-7-7, rust. **Mobile**—J. C. Prine's King 2, ne ne 4-1n-4w, sd 1160 ft shale.

ARKANSAS

Calhoun—Samuel S. Alexander's Smythe 1, c ne ne 7-11-14, base anhydrite 2985 ft, dr 3060 ft. C. E. Murdock's Southern Kraft 1, nw nw 17-14-13, fsg, td 3045 ft. **Columbia**—Atlantic's Levi Garrett 1, c nw sw 13-17-20, base anhydrite 3233 ft, top James lime 3767 ft, dr 5380 ft. Petroleum Finance Co.'s Barnett 1, c nw se 14-17-20, rur. Standard of La.'s E. D. Harris 1, 15-17-19, dr 2351 ft. G. H. Vaughn's Levi Garrett 1, c se se 14-17-20, top James lime 3705 ft, top Cotton Valley formation 5315 ft, dr 6768 ft. Tidewater & Seaboard's J. T. Beene 1, c se nw 15-18-19, elev 232 ft, top Tokio 3040 ft, anhydrite 3400-3560 ft, dr 3800 ft. **Craighead**—Tenn-Ark, Inc.'s Martin 1, 35-14n-3e, ruct, td 1754 ft. **Crittenden**—Stanley Oil Corp.'s D'Anner Hrs. 1, c 18-8n-9e, sd 3351 ft. **Little River**—Barbere et al's Mills 1, se sw nw 18-12-29, ru and sd. Clark et al's Strawn 1, se sw 20-10-32, woc 62 ft. Harford Oil Corp.'s Denning 1, ne sw 6-13-30, dr 1650 ft last report. D. L. Hersey et al's W. D. Waldrop 1, se nw 4-13-31, dr 1409 ft last report. J. G. Strahan's Dierks Lbr. Co. 1, sw se 21-12-28, sd 3355 ft. **Lonoke**—Cabot Drlg. Co.'s Cabot Townsite 1, 18-4n-9w, sd 2330 ft. J. W. Anderson's Eddington 1, c nw ne 7-4n-9w, sd 900 ft. Hudson et al's Young 1, sw nw 8-3n-7w, sd 225 ft. J. F. Russell's J. T. Gunter 1, se se 17-5-10, sd 1650 ft. **Mississippi**—Benedum & Trees' Winston Mack 1, nw sw 3-15n-12e, dr 3610 ft. **Pulaski**—Coker Oil Corp.'s Stone 1, 36-3n-11w, sd 905 ft. A. L. Kitselman's Fee 2, se sw 2-1s-13w, dr 3705 ft. **Union**—Fohs Oil Co. et al's Craig 1 (Union Sawmill fee), se se 5-18-14, dr 2855 ft.

CALIFORNIA

Los Angeles—Royal Lands Co.'s No. 1, 8-4-17, dr 1100 ft. Richfield's Dominguez 1, 2-4-13, lcn. Mojave Pet. Co.'s Gorman 1, 5-8-18, dr 250 ft. Continental's Newhall 1, 20-4-17, grading roads. Newhall Dr. Co.'s Needham 1, 13-3-16, rur to deepen, 3505 ft. British American's Pico 1, 12-2-12, dr 6404 ft. Tide Water Associated's Porter 1, 27-3-16, dr 5375 ft. Texas Co.'s Anderson-Spring 1, 9-2-15, dr 3500 ft. R. T. Grady's Sepulveda 1, 23-5-14, rig. **Orange**—New Fields' No. 1, 16-5-11, wocs 800 ft. A. V. Oil Co.'s No. 1, 16-6-10, to test 4750 ft. **San Bernardino**—Southern Counties' Los Serranos 1, 22-2-8, dr 2145 ft. **San Diego**—Dauphin Dev. Co.'s Irwin Kelly 1, 16-12-4, dr 575 ft. Palm City Oil Co.'s P. C. 1, 21-18-2, rig. D. A. Hargraves' No. 1, sec ?-15-3, dr 2980 ft.

SAN JOAQUIN VALLEY

Fresno—Petroleum Securities' No. 88-7F, 7-20-16, dr 6293 ft; No. 31-18F, 18-20-16, dr 6056 ft. Standard's No. 71-13C, 13-20-15, lcn; No. 82-13C, 13-20-15, dr 6875 ft; No. 1-17F, 17-20-16, foundation. Superior's Cagle 1, 6-20-16, lcn; Coalinga Fee 1, 7-20-16, dr shale 6574 ft. Texas Co.'s Mohawk 19, 12-20-15, removing equipment 4424 ft. Medford Oil Co.'s F. C. Goetz 1, 10-20-15, formation tests 6763 ft. Shell's Coast Range 1, 17-19-15, dr 2175 ft. Stuart Oil Co.'s Stuart 1, 12-21-14, dr 455 ft. Tide Water Associated's Fleishacker 57-1, 1-19-15, dr 5687 ft. Dauphin Dev. Co.'s Ragan 1, 19-21-14, dr 3588 ft. **Kern**—Ohio's KCL F-1, 10-31-25, dr 9062 ft. California Land Co.'s Salisbury 1, 7-29-24, wocs 5302 ft. Shell's KCL B-87-4, 4-30-25, dr 7750 ft. Gibson's Alferitz 3, 14-25-18, will redrill 1195 ft, td 1230 ft. G. W. Johnson's Brown-Paulette 1, 33-29-30, dr 1278 ft. Richfield's Tupman-Western 1, 32-30-25, r 8315 ft. Shell's KCL A-58-8, 8-27-26, dr 3780 ft. Texas Co.'s Camp-West-Lowe 1, 7-29-27, plugged to redrill 8625 ft, td 10,122 ft. Petrol's Reserve-Petrol 33-5, 33-11-19, dr 5945 ft. Hall-Baker's Reserve 33-2, 33-11-19, bailing 4615 ft. Richfield's KCL 1, 28-11-20, dr 7777 ft. Tide Water Associated's S. P. 2, 15-11-19, lcn. Wilshire's Tejon 34-1, 34-11-19, rig. C. C. White's Armstrong 2, 9-26-26, rig. Framac's Brown 3, 22-27-27, co 1355 ft. Julius Freid's No. 1, 34-32-24, dr 3575 ft. General's St. Helens 2, 12-28-20, rur. Little & Gilstrap's Keating 1, 20-27-27, pumping 25 bbls daily 2046 ft. Continental's KCL E-1, 17-30-26, redrilling 7686 ft, td 8574 ft. Richfield's Union Avenue 1, 6-30-28, dr 6792 ft. Continental's KCL A-3-8, 8-27-24, flowed 300 bbls salt water, running water witch 13,644 ft. Continental's Seaboard Associated KCL C-1, 26-27-24, drill pipe stuck 11,600 ft, parted at 10,200 ft, preparing to cement fish and test upper showings 13,064 ft. Standard's Mushrush 1, 7-27-24, dr 12,845 ft; KCL 8-B-1, 17-27-24, wocs 13,055 ft. **Kings**—Athalie Irvine's No. 1, 11-24-20, dr 2425 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper.*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
bs—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

COASTAL

Santa Barbara—Richfield's Tinaquaic 1, 36-9-32, rur. Barnsdall's Pezzoni 1, 15-8-32, dr 3986 ft. Petrol's Magenheimer 5-11, 9-8-32, plugged 4600 ft, td 4714 ft. J. E. O'Donnell's Helen 1, 8-7-33, dr 4925 ft. Continental's La Laguna 2, 25-8-31, dr 2300 ft. General's La Laguna 1, 6-7-30, dr 2000 ft. **San Luis Obispo** I. L. Burch's No. 3, 4-10-26, rig. G. E. Renner's R. H. L. 1, 7-32-22, lcn. Loma Grande's Luis 1, 28-31-13, wocs 1476 ft. Eureka Pet. Co.'s Union 1, 27-26-13, wocs 150 ft. **Ventura**—High Mesa's Butcher 1, 16-4-22, dr shale 1729 ft. Claran Oil's Hardison 1, 22-4-20, co 410 ft. Commander Oil Co.'s No. 7-F, 13-4-19, redrilling 575 ft. Merchants' Cochrane 8, 1-4-20, dr 1298 ft. St. Louis Oil Co.'s Williamson 1, 1-4-20, dr 630 ft. El Rancho Oil's Elkins 2, 9-3-19, lcn. Texas Co.'s Shiells 135, 4-3-19, repairing casing 3849 ft. Albatross Oil's Scheiferle 1, 17-30-20, rig. Texas Co.'s Yale Richardson 5, 13-3-21, pumped 99 bbls daily 6702 ft. Colima Oil's Burge 2, 29-5-19, reperforating 3485 ft. Section 20's No. 1, 20-5-19, dr 2210 ft. Hardison & Temple's No. 1, 22-4-21, wocs 656 ft. Stallings, Senter & Ahlburg's Stallings 1, 24-4-21, pumped water trace oil 1445 ft. Ventura Dr. Co.'s Canet 1, 10-3-23, dr 950 ft.

EXTREME NORTHERN CALIFORNIA

Colusa—Amerada's C.L.C. 1, 34-16-1, redrilling 7218 ft, td 7266 ft. **Glenn**—Ohio's Willard 2, 18-20-2, wocs 2253 ft. **Humboldt**—Texas Co.'s Eureka 2, 22-3-1, redrilling 4809 ft, td 7708 ft. **Monterey**—Texas Co.'s Lewis 1, 1-19-5, dr 3687 ft. L. B. Tannehill's Quinn 1, 35-20-8, dr 785 ft. **Sacramento**—Superior's Reclamation Board 1, 7-3-3, rur. **San Mateo**—Wilshire's Cowell 2, 20-6-5, dr 1480 ft. **Solano**—Richfield's Potrero Hills 1, 10-4-1, dr 4986 ft.

FLORIDA

Levy—Fla. Discovery Oil Co.'s Sholtz 2, sw sw ne 9-15s-13e, top chalk 3110 ft, odor gas at 3853 ft, sd for csg, td 3986 ft. **Nassau**—St. Mary's River Oil Corp.'s Hilliard 1, nw nw se 19-4n-24e, pulled csg set at 3935 ft, sr to re-set csg, td 4508 ft. **Polk**—Edw. A. Hill's Polk County Lbr. Co. 1, nw nw ne 32-25s-25e, dk. **Suwannee**—J. W. Phillips Oil Expl. Co.'s Shilkett 1, nw nw 14-4s-14e, spd and sd. Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, sd 203 ft for heavier rig.

ILLINOIS

Bond—Huppard et al's Dresser 1, sw ne nw 21-6n-4w, dr 1700 ft. Elmor et al's Dilman 1, sw se sw 13-6n-2w, td 420 ft. Lindsey Bros. et al's Butter 1, nec sw 31-4n-2w, dr 700 ft. **Champaign**—Barber & Seiver's Lindsey 1, c nw se 20-20n-8e, dr 420 ft. **Clark**—Snavely's Handy 1, ne nw ne se 17-11n-12w, fsg 885 ft. **Clinton**—Watkins & Wright's Wise 1, ne nwc se 24-1n-3w, dr 1300 ft. Farreley et al's Berginan 1, nw sw nw 30-1n-3w, td 1130 ft. Martin et al's Rensing 1, sw se ne 35-1n-5w, dr 1150 ft. Carlyle Dev. Co.'s Bott 1, c nw sw sw 17-2n-2w, dr 100 ft. Noelkemper & Murphy's Mikile 1, se sec ne 11-3n-3w, spd. White et al's Wilton 1, sw se nw 19-3n-2w, dr 100 ft. **Coles**—Wafford's Andrews 1, sec 21-11n-7e, dr 1320 ft. Phillips' Ozee 1, ne se ne 27-11n-8e, dr 2350 ft. Thompson Dr. Co.'s Degler 1, sec ne 9-12n-7e, td 2120 ft, repairing pump. **Cumberland**—National Consumers' Harrison-Ward 1, ne se ne 17-9n-9e, dr 1935 ft. Stewart's Cable 1, nec 26-9n-9e, dr 2650 ft. **Edgar**—Meyers' Brinkerhoff 1, c se se 26-13n-13w, dr 1250 ft. **Effingham**—Anderson's Hacer 1, nw sw sw 27-8n-4e, rur. **Fayette**—Longoria's Brasch 1, nec sw 1-5n-2e, dr 1675 ft. Flinchbaugh's Freeland 1, swc ne 10-6n-1w, mim. Hurricane Creek's Eckard 1, c nw ne 15-6n-1w, dr 1300 ft. Putman et al's Farmer 1, c se se 35-6n-1w, td 850 ft. Johnson's Joint Stock Land Bank 1, 250 ft s of ne sw sw 25-6n-2e, dr 750 ft. Pray's Blade 1, c se ne nw 25-6n-2e, rog. Mamouth & Murphy's Neal 1, c sw se ne 32-6n-3e, sd 1250 ft. Ketcherside & Fisher's Quigle 1, nw sw sw nw 11-7n-1e, dr 600 ft. Simmell et al's Workman Estate 1, sw swc se 26-7n-2e, rog. Runwaldt & Johnson's Unknown 1, nw nw ne ne 28-7n-3e, dr 1050 ft. Beck & Moore's Burrus 1, c se ne ne 27-9n-2e, lcn. Garland's Miller 1, sec se sw 34-9n-2e, fsg 1296 ft. **Jefferson**—Jennings et al's Patton 1, nw ne sw 1-1s-1e, dr 1600 ft. Buell's Pitchford 1, swc nw 2-2s-1e, lcn. Buell's Glick Real Estate 1, ne nw nw 5-3s-4e, coring 3115 ft. Benedum-Trees' Jeff O&G Co. 1, c nw ne 16-4s-2e, dr plug, cemented back to 2755 ft. **Lawrence**—Rockstead's Ulrich 1, se sw nw 20-3n-13w, dr 700 ft. Forman's Thompson 1, se sw sw nw 22-2n-12w, dr 300 ft. **Macoupin**—Dillon et al's Keele 1, sec ne 32-10n-9w, dr 200 ft. **Marion**—Oil Roy's Suggs-Meeker 1, sw nw nw 11-2s-1e, dr 1600 ft. Nash Redwine's Pruden 1, swc nw 10-2n-2e, dr 1000 ft. Mitchell's Lee 1, nw se ne 24-2n-2e, mirt. Coyer's Mulvaney 1, se ne se 6-2n-4e, dr 1700 ft. Conrey & Griffin's Bilek 1, nwc ne 26-4n-2e, rur. **Menard**—Scroggins' Fee 1, c sw sw 24-19n-5w, dr 1530 ft. **Montgomery**—Swords & Dougal's Ohman 1, sw nw nw 10-10n-1w, dr 1150 ft. **Morgan**—Alexander Oil Co.'s Gray 1, e½ nw ne 25-15n-9w, dr 1100 ft. **Moultrie**—Neely et al's Unknown 1, c nw ne 18-13n-6e, mim. Continental's Miller 1, c sw nw nw 22-15n-6e, dr 1775 ft. **Piatt**—Pray's Baker 1, sw ne ne 17-18n-6e, dr 2795 ft. **Randolph**—Chlorins et al's Anderson 1, sw nw ne nw 12-4s-6w, dr 640 ft. Cain et al's Smiley 1, sec nw 31-4s-5w, reaming 1090 ft. Arnes Dr. Co.'s Nicholson 1, ne sw nw nw 12-5s-9w, dr 700 ft. Badger Oil Co.'s Schroe-

SALE OF OIL AND GAS LEASES—Department of the Interior, General Land Office, Washington, D. C. Notice is given that the following described lands and deposits of oil and gas therein contained are offered to the qualified bidder of the highest bonus per acre for leasing pursuant to section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386: Unit No. 1, the principal island, East Timballier Island, known locally as Bird Island, located in fractional Secs. 34, 35, and 36, T. 23 S., R. 21 E., Secs. 2 and 3, T. 24 S., R. 21 E., and Sec. 31, T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 295.77 acres, more or less. Unit No. 2, two islands, adjoining Unit No. 1 in a northeasterly direction between said principal island and Raccoon Pass, Island No. 1 located in fractional Sec. 31, and Island No. 2 located in fractional Sec. 32, both in T. 23 S., R. 22 E., Louisiana Meridian, situated on the Gulf Coast of La Fourche Parish, State of Louisiana, lying above the elevation of mean high tide, containing 11.69 and 69.29 acres, respectively, more or less. Sealed bids will be received in the office of the Secretary of the Interior up to 12:00 o'clock (noon), October 31, 1938. Bids must be submitted on each unit separately but both units, if awarded to the same bidder, may be included in a single lease. Each bidder must submit a certified or cashier's check or draft for 1/5 of the amount bid, payable to the order of the Secretary of the Interior, and furnish a showing of qualifications as required by section 7 of Circular 1386. The remaining 4/5, together with the annual rental at the rate of $1 per acre, must be paid by the successful bidder prior to the issuance of lease, and the deposits of other bidders will be returned. The envelopes should be marked plainly "Bid for Unit No.———(1 or 2), East Timballier Area. Not to be opened before noon, October 31, 1938." The bidders are warned against violations of the provisions of Sec. 59 of the United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Protests by the State of Louisiana and others claiming under the State against the granting of Government leases for the group of islands on the ground that they are the property of the State were overruled by the Secretary of the Interior in a decision rendered July 29, 1938 (A. 21589), after an oral hearing at which the protestants were represented. The Secretary held that the United States has asserted ownership of and jurisdiction over East Timballier Island for more than 100 years and that the group of islands are public lands of the United States. Commissioner, General Land Office.

der 1, se nw nw 27-6s-6w, dr 875 ft. **Richland**—Leather's Yonaka 1, c nw se sw 22-2n-14w, rur. **Shelby**—Jolly's Jenkins 1, sec se 26-10n-4e, dr 1490 ft. Frederick et al's Fluge 1, c n½ ne nw 34-10n-5e, rog. **Washington**—Harris et al's Hage 1, c s½ se se 18-1s-5w, dr 375 ft. Fell Oil Trust Co.'s Thomas 1, se nw sw sw 15-1s-2w, dr 600 ft. Morris et al's Beguiln 1, swc ne 12-1s-1w, dr 1650 ft. **Wayne**—Robinson et al's Acola 1, nw nw ne nw 31-2s-6e, co 1800 ft. Weinert's Sprague 1, c ne nw se 4-2s-7e, dr 2460 ft. Weinert's Beecher 1, nec nw 21-2s-7e, dr 1150 ft. Dr. Moore's Moore 1, se ne nw 16-3s-5e, dr 2100 ft. Lake & Allen's Hazel 1, c ne nw 22-2n-9e, dr 1925 ft. Bruce's Holland 1, c s½ nw nw 5-3s-7e, dr 2250 ft. **Williamson**—Geo. Oil Syndicate's Scott 1, sw se sw 4-10s-2e, dr 1775 ft.

KANSAS

Barton—Shaffer's Inc., Barrett 1, sw nw 28-16-14w, dr 750 ft. Carlock & Atlantic's Demel 1, ne nw 30-17-13w, td 2600 ft. Long & Johnson's Eveleigh 1, sw ne 3-18-14w, fsg 2630 ft. **Butler**—Stewart & Gross' Semisch 1-A, nw se sw 34-27-7e, dr 1100 ft. **Cowley**—Gralapp et al's Clark 1, nw ne 11-31-3e, dr 3185 ft. Henderson's King 1, nec 22-31-4e, rur. Gralapp & Continental's Community 1, nwc 23-32-5e, dr 2345 ft. **Ellsworth**—Continental et al's Gray 1, sw se se 26-17-8w, testing 3310 ft. **Grant**—Panhandle Eastern's Joyce 1, c se 36-30-37w, td 2471 ft. **Greenwood**—Dunlap's Mortgage 1, nw sw 4-28-10e, td 2108 ft. Reed, Trustee's Shell 1, nw se 17-28-11e, lcn. **Harvey**—Derby Oil Co. & Gary Dr. Co.'s Jones 1, cel ne nw 7-22-1w, lcn. **Marion**—Cox & McGinnis & Saco Oil Co.'s Jolliffe 1, c s½ sw se 2-22-5e, dr 450 ft. **McPherson**—W. Kansas O. & R. et al's Union 1, nw ne sw 18-17-1w, dr 1550 ft. **Meade**—Cragin, Reeuscher & Turner's Adams 1, nwc se 22-34-30w, rur 200 ft. **Ottawa**—Babcock's Copemen 1, cnw s½ s½ se 7-10-2w, dr 2575 ft. **Pottawatomie**—Turner et al's Unshide 1, c ne nw 32-8-9e, dr 1350 ft. **Reno**—Garden's Strickler 1, nw 17-22-6w, dr 2585 ft. **Rice**—Spurrier & Bruce Oil Co.'s Cary 1, ne nw nw 30-18-8w, otd 1530 ft, co. Glimax Oil et al's Malone 1, se sw nw 36-20-10w, ur 8-inch 2495 ft. **Rooks**—Phillips' Tangly 1, c nw sw 25-8-18w, wocs 1300 ft. Producer's Ham 1, sw nw 25-7-19w, otd 1800 ft, running 8-inch. **Rush** — Cities Service's Samuelson 1, c ne 36-11-17w, rur. **Russell**—Nelson's Polcyn 1, sw 31-13-15w, rog. Yankey & Stearnes' Krog 1, nw se nw 7-15-13w, dr 1700 ft. Southern's Sellens 1, swc 22-15-13w, mim. W. Kansas O. & R. Co.'s Schneider 1, ne nw 35-15-14w, dr 2200 ft. **Sedgwick**—Crowe et al's Murphy 1, sw se 34-29-1w, dr 2600 ft. **Sumner**—Cameron & Spencer's Frey 1, nwc 5-30-1e, dr 900 ft. Vickers Pet. Co.'s Blue 1, cwl nw nw 1-33-2w, rust 3861 ft. **Thomas**—Ramsey Pet. Co. & Mabee's Ryan 1, c ne se 27-8-32w, fsg 4010 ft. **Woodson**—Nathan et al's Hassenpflug 1, nec 2-26-14e, dr 1100 ft.

SOUTH LOUISIANA

Assumption—Humble's Milliken & Farwell 1, Labadieville area, 15-14s-14e, dk fd. **Avoyelles**—Magnolia's Bowden 1, Evergreen area, 7-2s-4e, dr lime and shale 7856 ft. **Beauregard**—Republic's Lutcher Moore 1, Mistic area, 14-7s-2w, dr shale 6312 ft. **Calcasieu**—Sun's Lutcher Moore 2, Lunita area, 12-8s-13w, dr shale 8908 ft. **Cameron**—Federal Royalty Co.'s State 2, Calcasieu Lake, 13s-9w, lcn. Humble's Hanszen 2, Chalkley area, 9-12s-6w, testing 8568 ft. **Iberia**—Texas Co.'s State 5, Fausse Point, 35-11s-8e, dr shale 4145 ft. **Iberville**—The California Co.'s Schwing Lbr. Co. 1, Bayou Sorrel area, 96-10s-10e, lcn. **Lafourche**—Texas Co.'s LaTerre Co. 1, Golden Meadows, 1-20s-21e, woc 10,005 ft; same operator's State Catfish Lake 1, Golden Meadows, 77-19s-21e, lcn. **Orleans**—W. T. Burton's State 1, Lake Ponchartrain, 10s-13e, dr sand and lime 8256 ft; same operator's Faubourgde Montelusin B-2, Lake Ponchartrain, 11s-13e, dr shale 8050 ft. **St. Bernard**—Gulf's State RR 4, Lake Borgne, 12s-15e, dr shale 3564 ft. **St. James**—Shell's Schexneyder 1, LaPice area, 38-12s-15e, Catfish Lake 1, Golden Meadows, 77-19s-21e, lcn. **Orleans**—W. T. Burton's State 1, Lake Ponchartrain, 10s-13e, dr sand and lime 8256 ft; same operator's Faubourgde Montelusin B-2, Lake Ponchartrain, 11s-13e, dr shale 8050 ft. **St. Bernard**—Gulf's State RR 4, Lake Borgne, 12s-15e, dr shale 3564 ft. **St. James**—Shell's Schexneyder 1, LaPice area, 38-12s-15e, roads. **St. John The Baptiste**—Shell's Godchaux Sugar 1, LaPlace area, 97-11s-7e, woc 8935 ft. **St. Landry**—Herton's Thistlewaite Lbr. Co. 1, Beggs area, 60-4s-4e, dr shale 9956 ft. **St. Martin**—Shell's Hazel Burdin 1, Lake Verret, 15-13s-12e, dr shale and sand with show of oil 8339 ft. Texas Co.'s St. Martin Land Co. 11, Henderson, 21-8s-7e, sd 9404 ft; same operator's State 6, Lake Mongouloui, 10-10s-9e, dr shale 9754 ft. **Terrebonne**—Shell's Peters 1, South Houma, 73-18s-18e, making drill stem test 10,967 ft. Texas Co.'s Continental Land & Fur Co. 1, Bayou Penchant, 29-18s-14e, dr hard shale 9620 ft; same operator's State 2, Coon Point, 22s-14e, lcn. **Vermilion** — Stanolind's Stoval 2, Intra-Coastal City area, 88-14s-3e, dr shale 1987 ft.

NORTH LOUISIANA

Bienville—Producers O&G Co.'s (Hall et al), Graves & Thomas 1, se sw se 23-15n-10w. **Caddo**—J. Thomas Driscoll, Inc.'s Woolworth 1, 19-18n-14w, rur. R. L. Bauman's Slattery Est. 1, 35-18n-14w, blew out making gas at 2850 ft, killed, dr 4210 ft. Oils, Inc.'s A. Cazaux 1, 10-16n-13w, sd for heavier rig 3502 ft. R. E. Allison, State 1, se se 28-18n-14w, elev 175 ft, top massive anhydrite 4337 ft, perforated 5536-75 ft, tested gas flow, testing. Hollywood Oil Corp.'s C. &. B. Realty Co. 1, c ne ne 22-17n-14w, dr 6020 ft. Hall & Smith's Fee No. 1, se ne 5-17n-14w, lcn. Rodessa O&G Co.'s Chandler 1, 34-18n-14w, arr core 2416 ft. J. Weil's Dreyfuss 1, 20-18n-14w, lcn. R. O. Carter et al's Marks Meyer 1, 34-18n-14w, lcn. J. T. Parks et al's Grayson 1, se se 39-19n-15w, rur. **Caldwell**—Oakes et al's Kyle 1, ne sw ne 18-11n-3e, sd 470 ft. **Catahoula**—Sibley-Sabine Oil Corp.'s Peck 1, 36-10n-8e, sd 2020 ft. **Claiborne**—E. T. Oakes et al's E. C. Kilgore 2, nw se 28-21n-5w, base massive anhydrite 4171 ft, dr 5017 ft. **De Soto**—Samuel S. Alexander's Stell A-1, ne ne 5-12n-16w, cored sandy lime so 2740-60 ft, 7-in csg 2710 ft, testing with so&g, tl 2761 ft. A. L. Sutton et al's Frost Lbr. Co. 1, ne se 35-11n-15w, spd and sd. **Grant**—C. R. Bower's Harrison 1, sw ne 21-8n-5w, junked abd, td 2930 ft. **Natchitoches**—J. E. Popkins' Peavy-Wilson Lbr. Co. 1, 36-7n-9w, sd 300 ft. **Red River**—J. M. Forgotson's J. G. Marston 1, se se 30-14n-10w, top Nacatosh 960 ft, testing, td 1074 ft. **Sabine**—W. L. McClanahan's Frost Lbr. Co. 1, 22-9n-13w, hf fluid, arr pump after acidizing at 1616 ft, old td 5709 ft. LeGrande et al's Tatum 1, nw ne 17-8n-13w, so in chalk acidized, testing, td 2340 ft. Tropical Oil Co.'s Long-Bell 1, 5-8n-13w, arr deepen 3507 ft. Zwolle Synd.'s (Moffitt et al), Mansfield Hdw. Co. 1, ne ne 8-7n-14w, tested, sd 4325 ft. Geo. L. Pace's Logan 3, sw nw 26-10-13, acidized, testing, td 1952 ft. **Webster**—Magnolia's Pardee C-1, c nw ne 17-23n-11w, elev 203 ft, swabbed dry, so 6025 ft, top Travis Peak 6054 ft, top lower Marine 8046 ft, coring 8475 ft; Branton 1, 6-22n-9w, woc surf csg. Sibley-Sabine Oil Corp.'s McDonald 1, c nw nw 32-17n-9w, dr 500 ft.

MISSISSIPPI

Calhoun—L. C. Lucas' E. C. Boland 1, sw se 9-22n-9e, top Selma chalk 738 ft, sd. **Claiborne**—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11-2e, rur to deepen, td 2950 ft. **George**—Ryan & Anderson's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, elev 106 ft, top chalk 5481 ft, top of Eutaw 6743 ft, dry abn, td 7043 ft. **Hinds**—Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, elev 343 ft, dr 3843 ft hd sand. Southern Nat. Gas Co.'s Progressive Realty Co. 1, se sw 35-6n-4w, hole clean, dr 7830 ft shale and sand. G. Jeffrey's Gaddis Farms 1, nw se 26-7n-4w, sd 3448 ft. **Montgomery**—Dr. T. A. Chichester et al's E. C. Mitchell 1, se nw 30-20n-7e, dk. **Pontotoc**—Waldrop et al's Bray 1, se n½ sw 17-11s-1e, sd 288 ft. **Simpson**—Cleve Love et al's Garner 1, sw ne 1-10n-17w, spd and sd. **Wilkinson**—La. Crusader Oil Inc.'s Miss-Wis L. & T. Co. 2, sw sw 35-4n-1w, elev 198 ft, top Vicksburg 2974 ft, dr 3390 ft hd shale, sand. **Yalabousha**—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25n-7e, elev 415 ft, sd 2790 ft, red sand and shale. Chas. W. Crader's Jno. Bruce 1, ne ne 24-11s-6w, spd and sd 15 ft.

MONTANA

Blaine—Montana Gas Corp.'s Duncan 1, cnw se 6-32n-24e, p&a at 1690 ft, Wayne Creek structure. **Phillips**—Treasure State Oil Pool's Government 1, cse sw 2-24n-29e, dr 930 ft. **Pondera**—Gulf States Oil Co. and Zodiac Oil Co.'s Kellog 1, ne nw ne 23-28n-5w, dr 200 ft.

MICHIGAN

Allegan—American Dr. Co.'s Kage 1, 25-1n-14w, dr 990 ft. Gordon Oil Co.'s Fokkert 1, 26-4n-15w, dr shale 1458 ft. Hilliard's Rankin 1, 10-1n-11w, dr 210 ft. Rex's Nelson 1, 36-1n-15w, rig. McClanahan's Johnson 1, 3-2n-11w, dr 1104 ft. O'Brien's Jewell 1, 15-1n-12w, 6-in csg 1336 ft. Daily Crude Oil Co.'s Cutler 1, 16-2n-12w, rig. **Arenac**—Bartlett's Clement 1, 6-18n-4e, dr 810 ft. **Barry**—Collin & Soper's Simmons 1, 3-4n-10w, Traverse 1870 ft, so 1940 ft, sd 1942 ft. **Bay**—American's Hecht 1, 10-15n-3e, sd 3090 ft. Gulf's Bateson 1, 2-14n-4e, dr 710 ft. **Calhoun**—Verona's Fruin 1, 29-1s-7w, dr 2240 ft. **Clinton**—McDonald's Koeppen 1, 19-6n-3w, dr 1715 ft. **Crawford**—Weber's Floeter 1, 31-25n-1w, dr 460 ft. **Gladwin**—Bridger's State 1, 29-19n-2e, dr 1310 ft. **Huron**—Leonard's Milling 1, 10-16n-15e, dr 3290 ft. **Isabella**—Gulf's Hauck 1, 13-15n-5w, rig. **Kent**—MacCullum's Story 1, 32-7n-12w, Traverse 1865-72 ft, so 1872-88 ft, td 1992 ft, pb to 1886 ft. **Lapeer**—Hether's Foster 1, 26-9n-12e, dr Monroe lime 2770 ft. **Midland**—Andrew's Harris 1, 14-16n-1e, mim. Weller's Hepinstall 1, 9-13n-2e, dr 234 ft. Stork's Steger 1, 23-15n-2e, dr 2700 ft. Fortney's Sias 1, 19-14n-2e, dr 1114 ft. **Missaukee**—Moser Oil Co.'s Scherenhelm 1, 36-23n-7w, skidding rig lost hole 1450 ft. **Ogemaw**—Molloy's Morrison 1, 29-23n-3e, dr 990 ft. Rowmor's McBain 1, 27-21n-1e, dr 546 ft. Caldwell's State 9, 6-21n-3e, dr 606 ft. **Osceola**—Fortney's Beall 1, 25-18n-9w, dr (hfw in Traverse) 3298 ft. Champion's Ealy 1, 30-20n-8w, dr 770 ft. Franklin's Johnson 1, 26-19n-7w, dr 1310 ft. **Otsego**—Summer's Geraldine 1, 28-30n-3w, dr 1610 ft. Snow's Moore 1, 13-29n-2w, dr 1560 ft. **Ottawa**—Sommerville's Bowman 1, 19-7n-14w, sd 1730 ft. Lentz's Wissink 1, 19-7n-14w, dr 1440 ft; Hoezee 1, 30-5n-14w, so 1498 ft (Traverse lime), dr 1513 ft. **Roscommon**—Kirkham's Helen 1, 36-22n-2w, dr 2740 ft. **Van Buren**—Gulf's Wasylenke 1, 23-4s-15w, rig. Ross' Landrus 1, 11-1s-15w, lcn. Whitehill's Webster 1, 35-2s-16w, sd 1799 ft.

OKLAHOMA

Beckham—McWhirter's Fee 1, nw sw sw 34-8n-19w, co 2180 ft. **Caddo**—Texas Co.'s Smith 1, c ne nw 2-5n-12w, td 2556 ft, to run 7-inch csg. **Cleveland**—Rucker et al's Norman 1, 17-9n-2w (owpb-otd 7695 ft), rog. Big Chief Dr. Co. & Gulf's Strategier 1, nwc sw 25-9n-2w, dr 5835 ft. **Garfield**—Hughes Drlg. Co.'s Meisner 1, c ne nw 10-20n-4w, lcn. **Grady**—Carter et al's Smith 1, c se sw 25-5n-8w, sg 4140 ft. **Hughes**—Phillips' Moulder 1, se sw sw 1-6n-10e, wocs 311 ft. Doup et al's Bond 1, nec sw 7-7n-9e, dr 2075 ft. **Jackson**—Lippert et al's Howard 1, ne sw nw 10-3n-19w, fsg 1442 ft. **Kay**—Crawford et al's Boehl 1, sec nw 34-27n-2w, ur 10-inch 520 ft. Atlantic's Watson 1, sec nw 28-28n-1w, rur. Tidewater Associated Oil Co.'s Hickman 1, nwc ne 19-28n-1e, dr 2580 ft. Little's Prunty 1, nec sw 33-28n-3e, machine. **Kiowa**—Crawford & Zeliff's Kimray 1, swc nw 36-5n-18w, dr 450 ft. **Logan**—Continental's Donahoe 1, nw sw 16-18n-2w, dr 2675 ft. **McClain**—Villines' Pearson 1, se sw ne 13-5n-3e, dr 2950 ft. **Noble**—Hollenback et al's Mathews 1, c sw nw 9-20n-1e, dr 4895 ft. Phillips et al's Robertson 1, nw ne sw 29-24n-1w, pits. **Oklahoma**—McClennan et al's Rodesney 1, c w½ sw ne 27-11n-2w, rog. **Payne**—Starr et al's McKenzie 1, swc ne 3-18n-3e, pits. **Pittsburg**—Campbell's Featherstone 1, c n½ nw sw 19-3n-12e, dr 500 ft. **Pottawatomie** — Hall & Briscoe's Merkle 1, nwc se 32-8n-5e, rust 4356 ft. **Seminole**—Smith's Wolfe 1, nec sw 36-7n-5e, rust, td 2514 ft. Rogers' Kidd 1, ne sw se 33-10n-8e, dr 350 ft. **Stephens**—Mitchell et al's Westfall 1, sec 33-2n-4w, dr 3975 ft. **Washita**—Continental's Proctor 1, c nw¼ 28-10n-20w, dr 7740 ft.

WEST TEXAS

(This report is confined to the south and east portion of the Permian basin and the Delaware basin.)

Brewster—H. D. Wilcox et al's W. H. Kokernot 1, nw sw sec 12, blk C, J. V. Massey sur, sd 1871 ft. **Coke**—Barnett Pet. Corp.'s J. E. Mims 1, sec T&P sec 39, blk W, elev 2352 ft, sd 1861 ft. **Concho**—John W. Westbrook et al's Jim Rice 1, swc T&NO sec 18, co 328 ft. A. J. Hennings, Jr. et al's A. E. Jones 1, near nwc 300-ac tr sec 1879, lcn. **Crane**—Aloco Oil Co. (was Ardrey et al's) J. B. Tubb 1-a, near swc PSL sec 20, blk B-32, td 4504 ft, shot 400 qts 4320-4406 ft, used 2000 gals acid, swab 3 bbls oil per hr, sd to reacidize. Gulf Oil Corp.'s W. N. Waddell et al 9, c ne ne PSL sec 7, blk B-27, elev 2545 ft, dr lime 3425 ft. Magnolia's University 1-6, sec sec 6, blk 30, elev 2646 ft, top anhydrite 1135 ft, top salt 1205 ft, top Yates 2155 ft, top lime 3170 ft, trace oil 3380-82 ft, dr 3440 ft. Standard of Texas' University 1-6, sw se ne sec 6, blk 30, elev 2658 ft, dr 300 ft. **Crockett**—H. W. Black-Eubanks Oil Co.'s University-Humble 2, se sw nw sec 13, blk 14, dr 870 ft. Gilcrease Oil Co.'s University-Humbie 1-G, nw nw sw sec 13, blk 14, lcn. Stanley Lewis et al's A. C. Hoover 1, se sw ne GC&SF sec 2, blk 1, mim. **Culberson**—J. E. Fitz-Patrick et al's Wm. Cameron & Co. 1, c nw nw PSL sec 24, blk 81, sd 945 ft. P. W. Lewis et al's Niehaus 1, se se ne PSL sec 13, blk 109, elev 3955 ft, top Delaware lime 1178 ft, dr 2930 ft. H. J. W. Niehaus et al's C. M. Caldwell 1, se nw PSL sec 15, blk 109, elev 3878 ft, top Delaware lime 1165 ft, top sand 1215 ft, sd 2500 ft. L. G. Sheddan et al's S. J. Isaacs 1, center PSL sec 25, blk 52, sd 280 ft. **Jeff Davis**—H. F. Wilcox O&G Co.'s Jones-Coffield 1, nec H&TC sec 121, blk 4, elev 4537 ft, sd 3747 ft. **Ector**—Bert Fields-Ben Rogers' R. H. Speer-Owenwood 1, sw nw ne T&P sec 6, blk 44, T-2-S, elev 3205 ft, top salt 1540 ft, top Yates 2810 ft, top brown lime 3870 ft, top solid lime 4035 ft, so&g 4375-80 and 4382 ft, so and salt w 4423-35 ft, testing. **El Paso**—Tri-State Oil Co.'s Kinkel Bros. 1, nec sec 237, S. F. No. 7232, elev 3977 ft, sd 3571 ft. **Fisher**—Daube Bros. et al's R. S. Hardy 1, near c sw sw H&TC sec 49, blk 2, elev 2043 ft, top Noodle Creek 3715 ft, trace oil 3717-18½ ft, dry and abd 3736 ft; Bennett 1-A, near nw se ne H&TC sec 51, blk 2, elev 2010 ft, mim. **Tom Green**—Spinner Oil Co.-H. L. Fannin's B. Reed 1, sub-div 39, Mayson-Perry sur, elev 1992 ft, sd 5118 ft. B. C. Mann et al's Ike Funk 1, c e½ sw nw H&TC sec 38, blk 5, sd 575 ft. J. B. Watson et al's Llano 1, sec 16, Llano C.S.L. sur, sd 705 ft. **Howard**—S. S. Owens et al's D. S. Wright 1, nw se se T&P sec 33, blk 33, T-3-N, elev 2747 ft, sd 1378 ft. Ward Powell et al's Guitar 1, c ne sec 17, blk A, Bauer-Cockrell sur, elev 2508 ft, top anhydrite 1195 ft, top salt 1255 ft, top lime 3090 ft, dry and abd 3394 ft. **Hudspeth**—Haymon Krupp Oil & Land Co.'s K. S. Briggs 1, nwc T&P sec 24, blk 73, Tsp. 7, elev 4016 ft, 7-in 4415 ft, dr 4455 ft; S. J. Thaxton 1, near sec ne se T&P sec 34, blk 74, Tsp. 6, top gray lime 4580 ft, co 5133 ft. **Menard**—Lee Pet. Co.-C. D. Hagerty's Jas. Callan 1, swc e½ of J. M. Franz sur, sec 36, elev 2026 ft, est 500,000 ft gas with salt water, td 1270 ft. **Nolan**—Chas. E. Peddicord et al's C. H. Tipton 1, near se nw sw T&P

sec 43, blk 19, running 7-in csg 2260 ft. Union Oil Co. (Cal.'s), J. D. Pepper 1, nec T&P sec 57, blk 21, dr 1570 ft. **Pecos**—E. B. Carruth et al's J. R. Triplett 1, near c e line GC&SF sec 4, blk 194, sd 30 ft. Cox & Moore's White-Baker 1, c sw se T. C. sec 43, blk Z, sd 1805 ft. Geo. J. Greer et al's Price Est. 1, nec H&GN sec 3, blk 12, elev 2279 ft, top brown lime 1454 ft, dry and abd 1919 ft. J. N. Gregory et al's O'Neill-Humble 1-a, south cor n¼ H&GN sec 74, blk 10, elev 2435 ft, dry and abd 1777 ft. W. W. Gruber et al's Mrs. M. S. Sanger 1, c nw T. & St. L. sec 10, blk 135, lcn. Helmerich & Payne, Inc.-Wright & McMillen's Dow Puckett 1, se se ne T&P sec 66, blk 3, elev 3185 ft, top anhydrite 1210 ft, trace gas 2255-60 ft and 2735 ft, dr 2900 ft. Humble's A. H. Robertson 1, c nw ne T. C. Ry. sec 27, blk OW, elev 2797 ft, top red beds 1295 ft, dr 3605 ft. H. H. Sides et al's Blackstone-Slaughter 1-a, near sec T. & St. L. sec 25, blk 130, dr 1880 ft. E. M. Thomasson Prod. Co.'s J. Nations 1, sec 1, blk 105, W. P. Howard sur, dr 460 ft. Stanley A. Thompson et al's Elsinore Cattle Co. 1, se se GC&SF sec 53, blk D, elev 2938 ft, fsh tools 7342 ft. Trans-Pecos Oil Co.'s F. M. Gallaher 1, ne ne nw T&P sec 9, blk 51, Tsp. 10, sd 2240 ft; Popham Land & Cattle Co. 1-B, s½ GH&SA sec 235, blk 11 (3d hole), sd 2385 ft. Union Oil & Mining Co.'s First Nat'l Bank 1, near nec H&GN sec 6, blk 9, elev 2410 ft, sd 1760 ft. **Presidio**—Brite Production Co.'s L. C. Brite 1, ne¼ GH&SA sec 113, blk 12, sd 5427 ft. **Reagan**—John W. Emch et al's T. P. Land Trust 1, c n½ s½ sw T&P sec 203, blk 1, elev 2676 ft, top anhydrite 1150 ft, top salt 1210 ft, top Yates 1570 ft, dr 2310 ft. **Reeves**—H. F. Anthony & Lagoki Oil Co.'s Richards-Shaw 1, c n½ nw PSL sec 16, blk 59, jkd 1581 ft, skid rig, dr 150 ft. Frankley & Rice's W. A. Tunstill 1, ne ne nw T&P sec 10, blk 56, Tsp. 2, elev 2906 ft, top Rustler 190 ft, base salt 3070 ft, top black lime 3254 ft, top sand 3283 ft, td 3305 ft, shot 100 qts 3278-3305 ft, spray 7 bbls 42.3° oil with 2,000,000 ft gas. Ohio Oil Co.'s Popham L&C Co. 1, nw T&P sec 18, blk 54, Tsp. 10, elev 3623 ft, dr lime 4515 ft. **Runnels**—John Castor, A. E. Koerner & H. B. Goodrich's J. C. Beddo 1, sub-div No. 15½, T. T. Williamson sur No. 51, dr 1830 ft. J. W. McLean et al's E. H. Pflueger 1, Asa Clark sur, A-506, dr 1815 ft. Stephenson & Jackson's W. J. Fowler 1, near ne ne sw E. T. Ry. sec 150, sd 1355 ft. **Schleicher**—H. P. Opp et al's J. T. Jackson 1, nw ne T. C. Ry. sec 41, blk LL, elev 2353 ft, sd 635 ft. **Scurry**—H. H. Coffield & Guthrie, Inc.'s E. E. Spears 1, nw nw sw H&TC sec 130, blk 97, elev 2294 ft, top lime 1512 ft, pb fr 3543 to 2493 ft, shot 500 qts 2300-2425 ft, re-cem cas. P. G. Moran et al's F. W. Hardee 1, nwc H&TC sec 99, blk 97, sd 1000 ft. **Sterling**—J. W. Sward et al's T. G. Brennand 1, se se ne H&TC sec 107, blk 2, elev 2535 ft, top Yates 1028 ft, top brown lime 1746 ft, top solid lime 1820 ft, sd 3011 ft. **Stonewall**—General Crude Oil Co.'s J. D. Smith 1, sec H&TC sec 371, blk 2, elev 1958 ft, top Dothan 3530 ft, top Noodle Creek 3640 ft, top Saddle Creek 3813 ft, top Adams Branch 5032 ft, dry and abd 5735 ft. **Sutton**—Geo. Irvin et al (was A. A. Basse-S. J. Sackett et al's) W. A. Miers 1, c ne TW&NG sec 54, blk 14 sd 302 ft. **Upton**—White & Wilson's M. B. Webb 1, sw se ne sec 178, blk E, CCSD&RGNG sur, sd 150 ft. **Ward**—J. E. Fitz-Patrick, Frank Pickrell et al's F. I. Dyer 1, w¼ n¼ H&TC sec 135, blk 34, elev 2709 ft, base salt 3845 ft, top Delaware lime 5081 ft, sd 5085 ft. **Winkler**—Richardson Oils, Inc.'s J. M. Bashara 1-A, sw sw se PSL sec 22, blk 77, elev 2973 ft, top anhydrite 755 ft, base salt 2260 ft, first oil 3343-50 ft, dr 3450 ft.

EAST TEXAS BORDER COUNTIES

Cass—Bateman Drlg. Co.'s Jaynes 1, A. Douthette sur, sd 6505 ft (contract depth). **Harrison**—R. S. Barnwell's Mrs. Luther Smith 1, A. D. Hope sur, dr 1265 ft. **Marion**—Ark Fuel Oil Co.'s Hussey 1, Chas. Lockhart sur, cored Gloyd with so, 6033-51 ft, ran formation tester, showed some oil and sw, perf csg 5902-37 ft, acidizing, testing. Vestal et al's Moseley 1, D. Lane sur, sd 2768 ft. **Panola**—E. P. Pewitt et al's Rushing 1 (751-ac), Mannan Smith sur, lcn. Texas Co.'s Claude Adams 1, Thos. Cox sur, top lower Marine 7792 ft, top Permian salt 11,067 ft, pb to 9100 ft, cemtd 6⅝ in csg, perf and tested sw in lower Marine, pb to 5800 ft, testing with est 3 mil ft gas showing, old td 11,303 ft. **Sabine**—Hugo Allen et al's Brooks 1, Isaac Lowe sur, dr 5665 ft. **Shelby**—Grady H. Vaughn's Pickering Lbr. Co. 1, Brooks sur, rur. Redditt et al's Pickering Lbr. Co. 3, W. Snyder sur, 10-in csg 1189 ft, dr 2080 ft.

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TEXAS GULF COAST

Brazoria—Humble's Masterson 1, Anchor area, Geo. Robinson sur, mim. Normandie's Ramsey 1, Iowa Colony area, HT&B No. 69, dr shale 6550 ft. **Chambers**—F. A. Gillispie's Kirby Pet. Co. 1, West Cotton Lake, Chambers County School Land sur, testing 6400 ft. Salt Dome's Ogden 1, s of Anahuac, E. Douthit sur, flowing gas and salt water 7525 ft. **Galveston**—Midwest Royalty Co.'s Lobit 1, sw of League City, Perry & Austin sur, woc 9197 ft. Sun's Humphreys 1, Bolivar prospect, R. Barrow sur, dr shale 2150 ft. **Harris**—McAlester Fuel's Sweeney Estate 1, W. C. R. R. sur, dr shale 7670 ft. Jack Frazier's Lang 1, Highland area, R. White sur, woc 800 ft; same operator's Griffith 1, Mt. Houston prospect, Adams Smith sur, dk. **Jefferson**—British American Oil Co.'s Gladys City 1, w flank of Spindletop, J. A. Veatch sur, dr shale 4769 ft. Humble's McFaddin B-13, Jefferson Coast salt dome, in Gulf of Mexico, lcn. **Madison**—W. E. Holleman's Cannon Heirs 1, nw of Madisonville, J. P. Phillips sur, dr shale 1740 ft. **Montgomery**—Deep South's Foster Lbr. Co. 1, ne of New Caney area, P. Bryan sur, dr shale 6720 ft. Frazier & Bunte's Chase National Bank 1, sw of Conroe, D. Garrett sur, dr shale 8431 ft. Mills Bennett's Lewellyn & Foster 1, sw of Conroe, A. Hodge sur, dr shale 8028 ft. **Orange**—Sun's Lutcher Moore 1, North Orange area, B. Johnston sur, dr shale 7827 ft. **Trinity**—C. D. Davis et al's Gibson 1, n of Trinity, A. Donovan sur, ru. Max V. Scott's First National Bank 1, s of Trinity, W. Beasley sur, dr shale 2160 ft. **Wharton**—Humble's Hancock 1, e of Louise, L. L. Miller sur, dr shale 3550 ft.

SOUTH TEXAS

CORPUS CHRISTI DISTRICT

Aransas—Housh, Schofield & Thompson's Kent-Crane 1, Carper sur, woo, 7530 ft. **Calhoun**—Hiawatha's Roemer 2, Ogsberry sur, dr 8790 ft. **Hidalgo**—Harding's Card 1, Hidalgo Canal subd, cor 7450 ft. Phillips' Flores 1, por 39, dr 8930 ft. **Jackson**—Texas' Weed 1, Newell sur, cor 7207 ft. **Jim Wells**—Magnolia's Garcia 1, La Anima Sola gr, dr below 8250 ft; Moreno 1, La Trinidad gr, dr 2100 ft. Presnall & Tsesmelis' Hoffman 1, Los Presenas gr, cor below 4425 ft last rept. Shell's Blucher 1, Best sur, cutting out ds near 7318 ft, td. Smith & Storey's McGill 3, Baldwin sur, mim. Transwestern's Dunlap 1, sur 181, cor 6220 ft. **Nueces**—Humble's Michalek 1, sec 97, Bishop subd, ru. Phillips' Mastin 1, sec 146, dr 6200 ft. Seaboard's Wilson 1, Herrera gr, prep sp. Stanolind's Clark 1, Herrera sur, lcn. Texas' Little 1, sur 59, still trying to rec ds, td 7746 ft. **Refugio**—Austin & Heard's Hunsdon 1, Lopez sur, cor 5600 ft. Coty & Heard-Austin's Peck 1, Lopez sur, cor below 5505 ft in sdtr hole, otd 6226 ft. Darby's Rooke 1, Cobian sur, dr 4850 ft. Rutherford's Schirmer 1, Aldrete gr, testing, td 6333 ft. **San Patricio**—Grote's Carlobk 1, McCampbell Ranch subd, completing, 7143 ft. **Victoria**—Wellington's Boothe 1, sec 10, J. RR Co sur, dr below 1500 ft.

LAREDO DISTRICT

Bee—Chapman's Ablinger 1, Ryan sur, dr 2000 ft. **Mayo, Bunn & Chapman Minerals'** Sparkman 1, Walker sur, dr 3200 ft. **Duval**—Magnolia's Duval 1, sec 48, dr 2415 ft. Schwab & Trinity's Welder 1, sur 103, set sur csg. Thompson's Parr 1, sur 118, dr 4050 ft. **Goliad**—Steinberger's Alberecht 1, Hancock sur, dr 4000 ft. Sun's Shaper 1, Payne sur, cor 8000 ft. **Jim Hogg**—Goldston & Fox' Canales 1, Hinojosa gr, dr 2800 ft. Humble's Bass 3, San Rafael gr, ru. Navarro's Garza 1, Santa Teresa gr, lcn. **La Salle**—Lake-Tobian's La Salle (O'Connor) 1, sur 988, dr 1355 ft, snd woo 874-94 ft. **Live Oak**—Holland's West 2, Ragland sur, woo 4324 ft. **McMullen**—Barbara's Edrington 1, sec 79, drlg 2350 ft, snd 1750-1906 ft. Cities Service's Reed 1, sur 72, prep sp. Howell's Martin 3, sur 7, sd 580 ft, woo. Holbrook-O'Farrell's Miles 1, sur 143, lcn. Jones' Ezzell 39, Brewer sur, cor 1535 ft. Mid-Western's Byrne C-2, Pittuck sur, dr below 800 ft. Schimmel's Hagist 1-A, sur 125, cor 1420 ft. Schumway & Burns' Shiner 2, Grist sur 4, dr below sur csg. Taylor's Nueces 1, sec 115, lcn. Texas Inland's Miles 1, sur 5, lcn. **Starr**—Circle's Olivares 1, sur 241, sp. Hall & Schmidt's Margo 1, por 70, dr 675 ft. Sun's Olivarez 1, sur 239, woo 4911 ft; Speer 1, sur 274, cor 5100 ft. **Webb**—Holland's Bruni 1, Borrego gr, woo 1628 ft. Spice's Garcia 1, sec 592, dr below 1900 ft. **Zapata**—Thompson's Ramirez 1, por 18, dr 1400 ft.

SAN ANTONIO DISTRICT

Atascosa—Stanley's Schumann 1, Malone sur, rmg to set csg, 1700 ft. **Bastrop**—Franklin's Thaxton & Yarrington 2, Bangs sur, sd 2041 ft. Teas, Ashley & Hinton's Grizzard 1, Graham lge, still sd, wo csg 7175 ft. **Bexar**—Blackburn's Miller 1, sur 324, dr 420 ft. Johnston's Brown 1, sur 55, testing gas, some oil, 1375 ft. Philtop's Patton 4, Rodriguez sur, pulled rods 1113½ ft; Patton 4, Rodriguez sur, ru. **Caldwell**—Lincoln's Withers 1, House sur, mim. Nytex' Bridges 1, Floyd sur, dr 2310 ft. Tinkle's Blackwell 2, Roe sur, completing 2335 ft. **Frio**—Humble's McLean (Houston) 1, sur 162, wocs, set sur csg; Schley 1, sur 174, testing on pump, td 5309 ft, pb td 4800 ft. **Guadalupe**—Hamill & Hamill's Zuehl 2, Duran sur, dr below sur csg. Hueners' Bauer 1, Brown sur, dr 525 ft. King's Rosenbrock 1-A, Duran sur, ran electrical formation tester, woo, 1827 ft. **Kendall**—Carpenter's Seidensticker 1, sur 257, fsg 210 ft. Comfort's Gass 1, 1½ mi s Comfort, mim. Dewey's Seidensticker 1, sur 18, dr 289 ft. Reed's Marquart 1, Traviesso sur, dr by tools lost in hole, 665 ft. **Kimble**—Plateau's Bolt 1, sur 42, sd 1675 ft; Davis 1, sur 44, dr below 910 ft; Hunger 1, sur 43, sd 1640 ft. **Kinney**—Wardlow's Fee 1, Valdez sur, underreaming, 1290 ft. **Lee**—Pederson's Brown 1, Hudson sur, dr 5650 ft. **Maverick**—Humble & Wellington's Indio 1, Rivas gr, dr below 3175 ft. **Medina**—Cromwell's Tondrie 1, Rogers sur, mir, to pb, td 1336 ft. Gaston's Rogers 1, Wilson sur, pumping some oil, td 853 ft. Ziegler's Haby 1, sur 1, sd 75 ft; Saathoff 1, sur 231, co, fsg 905 ft; Weimers 1, sur 274, sd 875 ft. **Williamson**—Midwest's Terchelman 1, Jett sur, circulating, 2999 ft. **Wilson**—Stapper's McDaniel 1, Manchaca sur, dr ahead, 3070 ft.

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HEAVY-DUTY SAND PUMP
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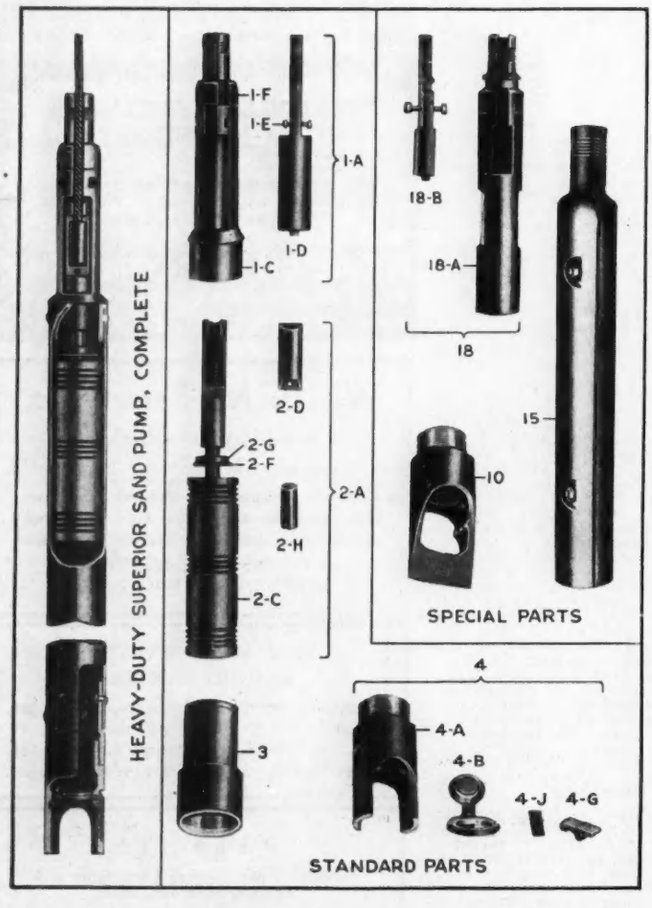
A new, heavy-duty Sand Pump is now being manufactured and sold by Oil Well Supply Company, Dallas, Texas. Increasing demand for Superior Sand Pumps where conditions were extremely severe led to the development of this new model. It is similar in general design and principle of operation to the regular type pump, but it is equipped with a heavier tube and is constructed throughout for the most exacting service. The main advantages of the new pump are safety, dependability, convenience and quick action.



The screw-type bottom bushing (3), which is riveted and welded to the seamless-steel tube, provides a strong threaded connection for the interchangeable bottoms. The sand pump bottom (4) gives best performance where sediment is loose. The chisel bottom (10) is used where it is necessary to break up tightly-packed sand. Both bottoms are easily and quickly dumped by merely pressing the trip latch (4-g) outward, thus releasing the complete valve assembly (4-b) and permitting it to swing downward on its pin. It is unnecessary to remove the bottom for either releasing or replacing the valve assembly.

The improved top (1-a), for years a popular feature of the regular type Superior Sand Pump, is also a part of the new heavy-duty pump. Its principal advantage is that it facilitates using only one line for both the sand pump and the cleaning-out tools; and it is unnecessary to cut this line when changing over. The improved top also eliminates fire hazard arising from babbitting the line in the plunger extension or rope socket, an operation frequently performed on the derrick floor.

The wire line for the Superior Sand Pump is permanently secured to the mandrel (2-h). Attaching the line to the pump is accomplished by merely removing the insert (1-d) from the improved top and the side piece (2-d) from the top of the plunger (2-a), placing the mandrel in the plunger extension, and then replacing the plunger side piece and the top insert. The collar (1-f) locks the insert in the top.

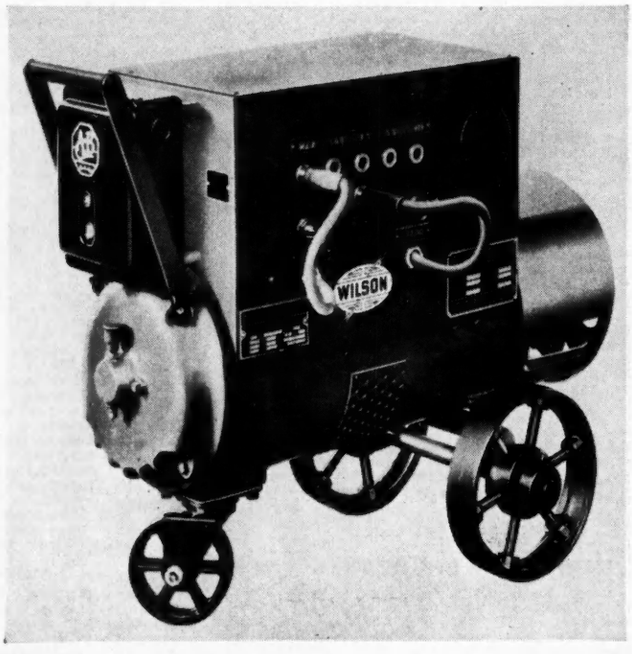
Using a single line for both sand pump and cleaning-out tools is facilitated by the improved special rope socket (18), which takes the place of a conventional rope socket in the string of tools. It is of slotted construction at the top and has a recess or seat for the same mandrel (2-h) that is used for attaching the line to the Superior Sand Pump.

The new, heavy-duty Superior Sand Pump is fully described in "Oilwell" Bulletin No. 170-A.

ARC WELDER
Wilson Welder & Metals Company

Wilson Welder & Metals Company, 60 East 42nd Street, New York, has announced the model SC, single-operator 100-ampere motor generator arc welder.

The machine is extremely compact and is designed primarily for light gage work, operating perfectly on the thinnest material that can be arc-welded.



Wilson Model SC single operator motor-generator arc welder

The following features may be mentioned: The adjustment of the output of the generator is accomplished by 5 marked receptacles with plugs for current or heat control and a multi-point field rheostat for adjustment of the open circuit voltage; the generator is of special design and will provide unvarying welding heat. It is of two-bearing construction, operating at a speed of 1800 r.p.m.; and the rheostat is equipped with a dial and pointer so that the machine can be easily reset for any previously used current valve.

TUBULAR TREATING HEATER
BLACK, SIVALLS & BRYSON, Inc.

Black, Sivalls & Bryson, Inc., Tulsa, Oklahoma, has perfected a tubular treating heater unit which "has proven its mettle" in heating corrosive waters and sour crudes under severe conditions that obtain in Michigan and West Texas.

The B. S. & B. Tubular Treating Heater, built like a refinery pipe still, is offered in four sizes with heating capacities for fluid volumes from 40 barrels per hour to 240 barrels per hour. The unit is sheltered by sheet metal

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Steadily, over a 46-year period the number of satisfied users of Axelson pumps has increased year by year. During this time the Axelson factory has grown from a tiny frame structure with a dozen employees into modern industrial plants employing hundreds of skilled artisans.

Today, Axelson leadership is an established fact. The constant, untiring efforts of Axelson engineers in providing improved and more efficient oil well pumps, with prolonged LIFE, have made it so.

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AXELSON

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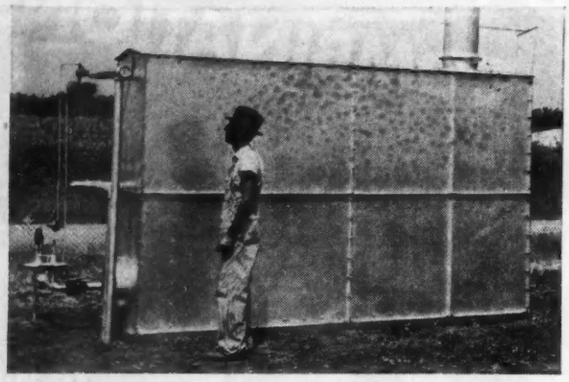
Foreign Representatives: "COSMOS" Soc. in Nume Colectiv, Bucharest, Roumania • *Direct Factory Representative,* Bucharest, Roumania • Industrial Agencies, Ltd., San Fernando, Trinidad, British West Indies *Factory Representative,* Maracaibo, Venezuela • Armco International Corp., Buenos Aires, Argentina

housing, it is a straight-tube heater, easy to clean or recondition, and inexpensive to renew.

Three distinctive features of the unit are significant to operators in fields where Michigan conditions obtain. Where gas is scarce the tubular heater is highly desirable because it has a higher thermal efficiency than any other simple heating device. The B. S. & B. Tubular Heater can be easily repaired and new parts cheaply put in place. Common 2-inch pipe is used for the tubes.



Black, Sivalls & Bryson Tubular Treating Heater

A Pressure Gauge AS RUGGED as the equipment it protects

The Abercrombie pressure gauge is built of extremely rugged parts operating on roller bearings, and will give a lifetime of accurate service. Heavy cast-aluminum case is mounted in forged steel sub threaded for screwing directly on line. The window is of unbreakable plexiglass. All internal parts operate in oil, preventing corrosion and wear.

Write for descriptive literature

ABERCROMBIE PUMP CO.

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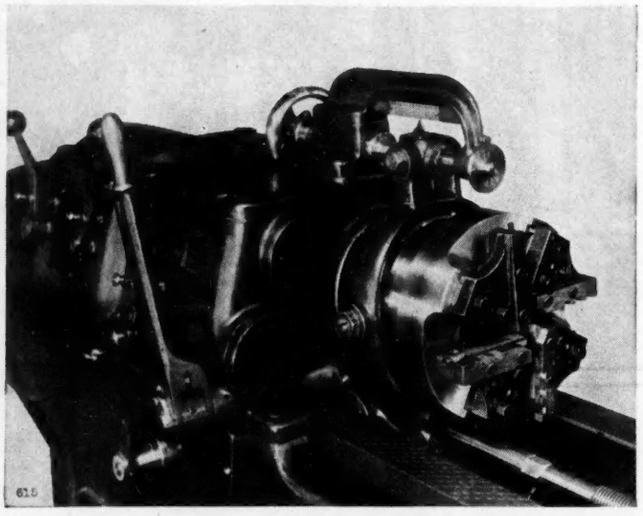
DIAL MICROMETER

Acme Machinery Company.

Acme Machinery Company, 4533 St. Clair Avenue, Cleveland, Ohio, recently announced a new dial micrometer for setting tangent threading dies to within .001-inch accuracy on pitch diameter without stopping the threading machine.

The dial indicator enables the operator to quickly and accurately adjust the tangent threading discs for the correct pitch diameter of the thread being cut without stopping



Acme Model 35 Threading Machine

the machine and with a minimum of set-up time, thus increasing production.

The double adjusting screw, another new feature, permits the operator when desired to take more than one cut on coarse pitch threads, to take any number of roughing cuts, before taking the correct finishing cut, the setting for which is not disturbed during the roughing outs made previously. Die holders on these machines are drop forged, rigidly bolted and doweled to hardened and ground steel die slides, preventing the dies from springing open under heavy cuts and causing inaccuracy of work.

The model 35 threading machine is built in single, double, triple and quadruple units, raking work up to 2-inch.

NEW OIL LAW BOOK

Samuel H. Glassmire, Tulsa, Oklahoma, attorney, announces the second revised and enlarged edition of his textbook, "Law of Oil and Gas Leases and Royalties."

This new volume is a standard textbook covering the law of oil and gas as applied to oil leases, royalty conveyances and mineral deeds, and contains 2000 citations to recent recisions of the courts of 23 oil producing states. The book is divided into 4 parts, containing 20 chapters, covering more than 100 separate topics, with a complete cross-reference index and set of up-to-date forms.

Part one, "The Production of Petroleum," covers oil sands and recovery methods and the new conception of oil production, including proration, spacing, and unitization under the oil and gas conservation laws. It also contains chapters on the evolution of the oil and gas lease, as the basic contract of the industry, and the function of the mineral deed, as a conveyance of royalty.

Part two, "Estates in Oil and Gas," deals with the theories of ownership of oil and gas and the estates created therein by acts of the parties and by operation of law, and covers guardianship leases, homesteads, etc.

The third part covers the "Law of the Oil and Gas Lease," and follows the covenants and provisions of the standard lease. Bonus, rentals and royalty provisions are treated separately as well as the implied covenants and forfeiture of the lease. This part also deals with the Indian forfeiture of the lease.

Part four is a practical summary of the "Legal Incidents of Leases and Royalties" and covers the rights of lessors and lessees, and such special topics as incorporation, mining partnerships, liens, taxation, etc.

The volume contains a pocket supplement for annual annotations, keeping the work up-to-date and making further editions unnecessary. The price of this book is $10. Copies may be secured from the Book Department, Gulf Publishing Company, P. O. Drawer 2811, Houston, Texas.

This Week with the Industry's EQUIPMENT SUPPLIERS

Yale D. Hills Manager of Timken Distributor Sales

Yale D. Hills has been made manager of distributor sales for the service-sales division of The Timken Roller Bearing Company. For several years he has been manager of the Los Angeles territory branch of the company. Hills' new headquarters will be at the main Timken factory in Canton, Ohio.

Jeffrey Moves Texas District Office from Dallas to Houston

The Jeffrey Manufacturing Company announces removal of its Texas district office, formerly located at Dallas, to Houston. T. P. Burke is district manager and has associated with him H. F. Adrian, sales engineer. The Houston office is located at 6358 Auden Street, telephone Lehigh 4731. Headquarters of the company are at Columbus, Ohio.

John A. Chapman Joins Frick Reid Corporation

John A. Chapman, general manager of Lucey Products Corporation of Tulsa, has become associated with Frick Reid Supply Corporation, specializing in rotary drilling equipment. The announcement was made by Franklin E. Bernsen, president of the Lucey firm. Chapman, who has been a resident of Tulsa for 20 years and associated with Lucey Products Corporation since 1930, will continue to make his headquarters in Tulsa.

Chapman for years was in charge of real estate and industrial properties for the late Charles Page, and made his first contact with the Lucey company when he built a warehouse for the supply firm shortly before the philanthropist died. He joined Lucey in May, 1930, and after an extended visit to the manufacturing plant at Chattanooga, had charge of sales work in Kansas. Later he handled promotion work at Fort Collins, Colorado, sales in Kansas, was assistant sales manager at Tulsa, and finally general manager. He has had a wide experience in rotary equipment, machinery, and drilling operations.

South American Representative Looking Forward to Oil Show

B. E. Johnston, who covers Trinidad, Venezuela and Colombia as representative of Baash-Ross Tool Company, Guiberson Corporation and Staytite Company, is already looking forward to leaving Port of Spain, Trinidad, in time to attend the next oil show in the United States.

John Zink Moves New York Office

John Zink, owner of John Zink Burners, Tulsa, announces the removal of the company's New York offices to 342 Madison Avenue, Telephone VAnderbilt 3-1074. J. Arthur Moore, formerly assistant to T. E. Ward, president of Oilfield Equipment Company, will be in charge of the New York office.

D. R. Burr, Goodyear Consultant, Retires

D. R. Burr, consulting manager for the Mechanical Goods Sales Department, of the Goodyear Tire & Rubber Company, Akron, Ohio, a veteran of 44 years' service in the rubber industry, has announced his retirement on pension, effective immediately.

Mr. Burr's initial experience was gained with Kilborn & Jacobs, mill supply and mechanical goods jobbers, formerly of Columbus, Ohio, beginning in 1894, at the age of 21. This was followed by four years as an independent jobber of mechanical rubber goods.

In 1905 Burr joined Diamond with the sales department and in 1906 was placed in charge of western sales for that company, headquarters at Chicago. In 1913 he joined Goodyear, taking

GORDON RICHMOND

Gordon Richmond, formerly Gulf Coast district sales manager for Hughes Tool Company, has been promoted to general sales manager. S. P. Brown continues as vice president and general manager. Richmond is active in the American Petroleum Institute, and at present is secretary of the Institute's Division of Production, Southwestern District, and a director in the Houston chapter.

P. C. Jones, president of The S. M. Jones Company, has just cut a giant birthday cake in celebration of the 10th anniversary of the introduction of fully normalizing to the sucker rod industry. Shown in the picture with Mr. Jones are heads of the engineering, technical and factory staffs in Toledo. In the background is normalizing furnace.

This interesting manufacturing improvement, which the makers claim gives sucker rods greater strength and ductility, was the result of an interesting discovery made in Smackover, Arkansas, in about 1927. Jones' engineers were studying the peculiar phenomenon which later became known as ringworm corrosion. A short distance from the end of each sucker rod a series of corrosion pits occurred encircling the rod. Study and microscopic examination showed that this section was vulnerable to corrosion because the grain structure at this point was different.

Fully normalizing, which was introduced by Jones 10 years ago this month, overcame this difficulty by eliminating the heat demarcation zone as the rods are fully normalized from end to end.

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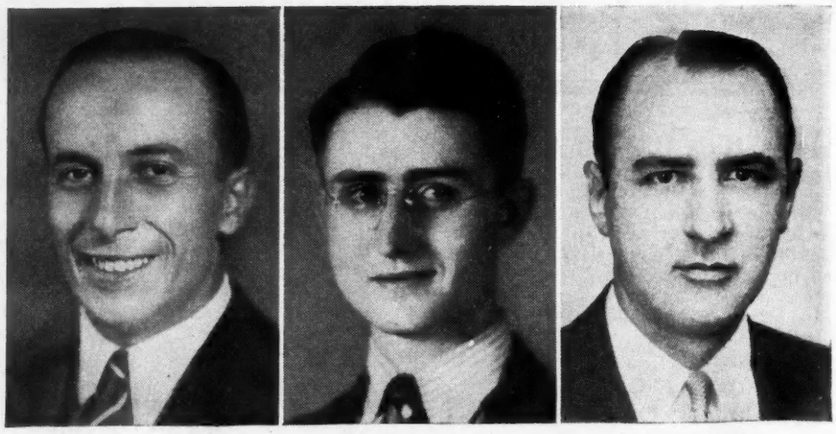

F. W. LAVERTY
In charge of the department, headquarters at Olean, New York

T. C. WEBB
Department manager with headquarters at Tulsa, Oklahoma

F. J. JOBST
Representing the department in the company's New York office

charge of the Chicago office for mechanical goods sales.

In 1916 he was assigned to Akron as assistant manager of the department under the late I. R. Bailey. In 1918 and 1919 he was assigned temporarily to the Export Division to establish a sales setup for Goodyear mechanical goods products in Australia and New Zealand.

Returning to Akron he resumed his duties as assistant manager for a short time and in 1920 was made manager of mechanical goods sales. Since 1933 and up to the time of his retirement, he was consulting manager. Burr is widely known throughout the industrial world.

Well Equipment Corporation Represented on West Coast

Well Equipment Manufacturing Corporation, Houston, Texas, announces the appointment of Petroleum Equipment Company, Los Angeles, as distributor of WECO products in California, through Petroleum Equipment Company's 11 stores. The WECO organization has simultaneously transferred C. A. Polk, formerly district representative in the North Texas territory, to California as company representative on the West Coast. Polk has established headquarters at 245 Corona Avenue, Long Beach.

C. A. POLK

Arch Bowman Representing Smith Steel Foundry Company

Arch Bowman, Kennedy Building, Tulsa, is now sales representative for Smith Steel Foundry Company, Milwaukee, in the area west of the Mississippi River.

In addition to his connection with Smith Steel Foundry Company, Bowman represents Baird Manufacturing Company, Cleveland Hardware & Forging Company, National Engineering Products Company, Badger Malleable & Manufacturing Company and Continental Car-Na-Var Corporation.

Jon R. Long Forms Gas Lift Organization

Jon R. Long of Fort Worth, Texas, has completed organization of Kyner-Long Corporation, with headquarters at Fort Worth, Texas.

This company was formed to develop, manufacture and sell gas-lift equipment, and offices will be maintained at Houston and Fort Worth, as well as field points in which there is gas-lift activity.

Another official of the new company is Bob Kyner who formerly was chief engineer for the Gas Lift Sales Corporation of Dallas.

Oil Center Tool Company Absorbs P. & D. Specialty

Oil Center Tool Company has recently purchased the physical assets of P. & D. Specialty Company, of Houston, including the shop, stocks and good will, and has dissolved the latter corporation.

CORRECTION

In the September 12 issue of THE OIL WEEKLY appeared an article entitled "Portability and Speed Feature New Gravimeters." Table 1 indicated the period of manufacture for the Thyssen type gravimeter as 8 years, whereas it should have read 4 years.

A small amount of water vapor present in an explosive mixture of air and gas will increase the power of the explosion.

Squeaks from the Bull Wheel

Checkmate!

Tommy, aged fourteen, set out to get a job. He asked a foreman of a local engineering works for one.

"What can you do, Sonny?" asked the foreman.

"Anything," replied Tommy.

"Can you file smoke?" asked the foreman.

"Yes sir," replied Tommy with a grin, "if you'll screw it in the vice for me."

He got the job!

In Memoriam

"At sixty miles drove Tommie Sharp; there came a train—he plays a harp.

"At 50 miles drove Allie Pidd; he thought he wouldn't skid, but did.

"At 90 miles drove Eddie Shawn; the motor stopped, but he went on.

"Reposes here one Adolf Lutie; he turned his head to watch a cutie.

"And Booger Red is parked in this'n; he didn't stop or look or listen."

It's a Kneesy Method

"Should a man propose to a girl on his knees?"

"Yes, either that or she should get off."

A Lamb Dyer

A very nervous man was called on to make a speech, and performed miserably, and knew it. "I want to congratulate you for that fine speech," one of his hypocritical friends said to him. "Thank you," replied the nervous man, "but did you ever hear the story about the man who dyed the wool on the backs of the lambs? Well, they called that man a lamb dyer, and you are something that sounds very similar. Gimme a match."

Wrong Side

"So you're my grandmother, are you?"

"Yes, on your father's side."

"Well, you're on the wrong side; I'll tell you that right now."

Useful

"Paul, this suit is very shabby. May I give it away?"

"Heavens no. That is the suit I wear each time I go to protest against my income tax assessment!"

All Depends

"Now I want you to tell me which of those words are singular and which are plural. Tompkins, you take the first: 'Trousers'."

"Singular at the top and plural lower down, sir."

Frenchman's Dilemma

"When I first discovered that if I was quick, I was fast, that if I was tied, I was fast, if I spent too freely, I was fast and that not to eat was to fast, I was discouraged. But when I came across the sentence, 'The first one won one one dollar prize,' I gave up trying to learn the English language."

Economizing

A tramp paused outside a large house, and as he did so another of his kind came shuffling out of the gate.

"Any luck mate?" asked the first tramp.

"It ain't no use tryin' there," was the reply. "It's a poverty-stricken 'ole. There was a couple o' women tryin' to play on one blinkin' pianner!"

House Detective

"Mummy, I want to whisper something."

"Darling, big girls that are nearly five never whisper before company."

"All right then, but that gentleman over there took another cake when you weren't looking."

All Wet

It was pouring. Two men who had quarrelled went out in the rain to settle their differences. They fought until one got the other on his back and held him there.

"Will you give up?" he asked, and the reply was "No."

After a time the question was repeated, but again the reply was "No."

"Then," said the other, "will you get on top for a while and let me get under? I'm getting all wet."

Sign

"You look lovelier to me every minute. Do you know what that's a sign of?"

"Sure. You're about to run out of gas."

Aboard Ship

"Don't be downhearted. Seasickness has never killed anyone."

"Don't say that. It's only the hope of dying that has kept me alive so far!"

Hired

The famous criminal lawyer had won a shockingly bad case by eloquence and trickery, and a rival lawyer said to him, bitterly:

"Is there any case so low, so foul, so vilely crooked and shameful that you'd refuse it?"

"Well, I don't know," answered the other with a smile. "What have you been doing now?"

Where's Father?

"What is home without a mother?"

"Well I am, tonight."

Perambulating Landmark

He was taking a ride in the country with his girl friend.

She: "What are you stopping the fliver for?"

He: "The road map says to turn north and follow the trolley. We'll have to wait until one comes along."

What About the Tuna?

"Well, we finally found out what's become of those pieces of chicken that have been disappearing," the head chef reported to the restaurant owner.

"Fine! What happened to them?"

"That new green cook has been using them to make chicken salad!"

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